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# ***JPRS Report***

## **Soviet Union**

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***Economic Affairs***

# Soviet Union

## Economic Affairs

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## **Economic Policy, Organization, Management,**

### **Goskomstat Chairman Explains Restructuring Plans**

18200008 Moscow VESTNIK STATISTIKI in Russian  
No 9, Sep 87 pp 3-10

[Article by M. Korolev, chairman of USSR Goskomstat: "On the Fundamental Restructuring of the Work of State Statistical Agencies"; a presentation of the report at the expanded meeting of the board and party-economic aktiv of USSR Goskomstat]

[Text] The June (1987) CPSU Central Committee Plenum will go down in the history of the country as a party forum proclaiming a radical reform of the system for managing the economy in accordance with the consistent course of perestroika and acceleration of the social and economic development of the country.

The fundamental restructuring of statistical work in the country is an integral part of this reform and will doubtless become a brilliant page in the history of the development of domestic statistics.

The party and government are paying exceedingly great attention to national statistics. Its most important questions have recently been examined twice in the USSR Council of Ministers Presidium and three times in the meetings of the CPSU Central Committee Politburo.

The report of General Secretary of the CPSU Central Committee M.S. Gorbachev at the June (1987) Central Committee Plenum stressed: "A very important and critical question involves the fundamental restructuring of our statistics. Here we need an abrupt turn toward qualitative indicators, more information on questions of regional and social development, and the carrying out of various selective surveys. Serious social and economic analysis and therefore a competent approach to the problems is impossible without this. It is also necessary to extend the limits of the materials that can be published in economic and social statistics."

The report of Chairman of the USSR Council of Ministers N.I. Ryzhkov at the 11th Convocation of the 7th Session of the USSR Supreme Soviet sharply criticized the work of the national statistical agencies: "The restructuring of the administration of the national economy requires an improvement of the entire management of national statistics. Today an extensive network of statistical agencies is in operation in the country. But they are still not working very well. Many data are unreliable, do not reflect the essence of economic phenomena and do not give the population sufficient statistical information. All of this makes more difficult the analysis of economic and social processes and trends and the making of correct decisions."

Such attention to statistics is no accident: it is explained by its diminished role in the overall system of administration.

The Political Report of the CPSU Central Committee to the 27th Party Congress gave a basic assessment of the work of national statistical agencies: "Statistical work is in need of serious improvement." This capacious phrase was specified in the decree passed by the CPSU Central Committee and USSR Council of Ministers on 17 July 1987 "On Measures for a Fundamental Improvement of Statistical Work in the Country," a document that defines all the activities of statistical agencies under contemporary conditions.

In accordance with the decisions of the 27th CPSU Congress and the January (1987) and June (1987) CPSU Central Committee plenums on a radical reform of the management of the economy, the decree states, it is essential to restructure statistical work in the country in a fundamental way and to increase substantially the role of its agencies in the system for managing the national economy so that statistics will become an active instrument of effective planned management under the new operating conditions. The existing system of statistics does not fully provide for the requirement that the management of the economy at the national, sectorial and regional levels of administration has for reliable, timely and profoundly analytical statistical information.

It was stressed that the state of analytical work of statistical agencies does not meet contemporary requirements. The most important processes of expanded socialist reproduction and the tendencies and inherent laws of social development are being studied superficially and their analysis is not aimed at exploring reserves for economic growth and the revelation of the basic reasons for shortcomings in economic activity.

The necessity of a serious improvement of the system of correlating statistical indicators was noted. To a considerable extent, the existing reporting is oriented toward a gross approach to the assessment of the results of work and basically reflects quantitative characteristics rather than qualitative reforms.

The fight against exaggerated reporting, deception and inflated performance that do tremendous damage to the national economy is being waged extremely unsatisfactorily.

As a result of the establishment of unjustified limitations to the publication of statistical materials, the decree states, there has been a noticeable worsening of the information distributed to the public, the propaganda work of statistical agencies has been weakened, and the possibilities for sociological studies have been limited.



The CPSU Central Committee and USSR Council of Ministers resolved to carry out a restructuring of national statistics to strengthen its impact on the acceleration of the social and economic development of the country and to increase the role of statistical agencies in the system for managing the national economy.

The most important tasks in national statistics under the new management conditions are defined to be:

- a comprehensive study of the profound changes taking place in the society and of economic and social processes on the basis of a scientifically founded system of indicators;
- the generalization and forecasting of the trends in the development of the national economy;
- the revelation of the existing reserves for increased efficiency in public production;
- the timely provision of party, soviet, managerial and economic authorities and the broad public with reliable information.

The indicated decree of the CPSU Central Committee and USSR Council of Ministers specifies the main directions for a fundamental improvement of statistical work in the country.

One of the most important of these directions is the improvement of economic analysis and statistical information.

This work in the system of statistical agencies must emphasize problems in the realization of a strategy for acceleration, comprehensive intensification, and proportionality and balance in the economy and course of the fulfillment of state plans for economic and social development and national and regional programs.

The task is to guarantee an abrupt turn toward the analysis of qualitative indicators of economic growth and an increase in labor productivity, the quality of output, the saving of resources, the efficiency of the utilization of the production potential, the acceleration of the turnover of working capital, and the increase in the profitability of production.

Statistical agencies must concentrate their work on the analysis of the processes of the acceleration of social and economic development on the basis of scientific-technical progress, the reorganization of structural and investment policy, the system and methods of management, the rate of success of implemented measures to raise economy, and the realization of the party's social policy.

The deepening of economic analysis must be based upon a complete review of the content of the systems of indicators in all statistical sectors proceeding from the fact that they will qualitatively characterize the changes taking place in the economy and its development. In so

doing, it is necessary to study carefully the opinions of scientists, economists and skilled workers stated in the course of the discussion developing in the press.

In statistics, it is necessary to realize a fundamentally new approach to the evaluation of the economic work of associations, enterprises and organizations based on the contemporary conditions of management, the new system for putting together plans for economic and social development, and the strengthening of the role of quality indicators.

Great importance attaches to a permanent analysis of the results of the radical reform of economic management, its economic and social consequences, and the transfer of enterprises and organizations to new methods of management with an assessment of the effectiveness of this.

Consequently, it is essential in industrial statistics to elaborate a system of indicators oriented toward the final results of the work of enterprises and sectors. Questions in the analysis of the fulfillment of state orders, contractual obligations for the delivery of output, and indicators of scientific-technical progress and the technical level of production, renewal and the quality of output must become key questions.

Indicators of the dynamics of the volumes of industrial production are also acquiring a new aspect. Although they will not be utilized for evaluating the work of enterprises, the calculation of the increase in the total volumes of industrial production actually developing will retain its importance for the analysis of the general trends and the evaluation of structural relationships and sectorial and territorial proportions.

Indicators of the foreign economic activity of industrial enterprises will be essentially new. The object of analysis must be questions in raising the competitiveness of output, expanding export deliveries, and the influence of foreign economic activity on the results of the work of enterprises and the corresponding industrial sectors.

The statistics of scientific-technical progress deserve special attention. Here, as everyone knows, mainly quantitative characteristics of fulfilled tasks predominate. The processes of the renewal and technical reequipment of sectors and the utilization of new equipment and advanced technology are analyzed superficially. There is no clear system of indicators and analysis of the economic efficiency of new equipment and the utilization of the scientific-technical potential.

It is essential in the near future for the department for statistics on technical progress of USSR Goskomstat with the participation of the research institute of USSR Goskomstat and the corresponding subdivisions of USSR Gosplan and the USSR State Committee for

Science and Technology to work out a new and harmonious system of indicators of scientific-technical progress and to outline specific measures to strengthen the economic analysis of the indicated problems.

A fundamental restructuring of the statistics of finances and prices is required, where perhaps more than in any other branch of statistics many unresolved tasks of a methodological and organizational nature have accumulated and no system approach is provided for in the statistical study of the impact of financial controls and incentives on raising the efficiency of production. It is necessary to raise substantially the scientific-methodological level of this branch of statistics and to work out a system of indicators linked with balance estimates on the national economy and making possible a serious analysis of the influence of the financial and credit mechanism on the development of economic methods of administration and on the extension of cost accounting, the observance of contractual obligations, the increase in the profitability of production and profit, the lowering of the production cost and the improvement of the quality of output, and the reduction of nonproductive expenditures and losses.

The statistics of the agro-industrial complex have no generalizing indicators of the efficiency of the development of the agro-industrial complex and the utilization of its potential, the results of scientific-technical progress, the calculation and analysis of the production of agricultural output broken down by rayons, and losses of output in harvesting and shipping.

The system of generalizing indicators of the statistics of capital construction is in need of considerable review. It must characterize the entire investment cycle and the provision and saving of resources and provide for more information by regions.

The statistics of transportation continues to analyze isolated indicators of the work of railroads, motor vehicles and other types of transportation. We need indicators for the country's transportation system and its regions, for the interaction of different types of transportation within them, and for the efficiency of the development of the system and its components.

Social statistics faces important problems: the system of its indicators and the methodology of their development are in need of change and reorientation in accordance with the social aspects of the restructuring of management. This statistics essentially represents a diverse set of indicators of sectorial statistics of the nonproduction area. There are no generalizing indicators characterizing the social conditions, quality and way of life of the Soviet people, especially of different social groups of the population and no comprehensive approach has been developed in the analysis of the social development of the society.

As the press correctly pointed out, in particular in the article of Academician T.I. Zaslavskaya (*Kommunist*, No 13, 1986; *Pravda*, 6 February 1987), the sociological research lacks the proper organization and coordination and the level of the scientific study of the programs of many completed investigations and of the analysis of the materials obtained is low.

It is essential to expand information significantly and to raise the quality of statistical materials on the social development of Soviet society—on the observance of the socialist principle of the remuneration of labor, the satisfaction of the people's demand for goods and services, the resolution of the housing problem, the establishment of an up-to-date highly developed sphere of social and cultural services, the activation of the human factor and the improvement of the socialist way of life.

It is necessary without delay to work out and put into the practice of statistical correlations indicators reflecting the improvement of socialist production, social-class and national relations, the development of democracy and self-administration, and the implementation of the principles of social fairness.

In connection with the resolution of these major problems, the task has been set of reorganizing social statistics, establishing the corresponding subdivisions in the goskomstats of the republics, and of working out a complex scientifically founded integrated system of information on social development on the basis of the materials of all-union population censuses, current statistics and regular selective social demographic surveys.

It is necessary to increase substantially the network of families permanently surveyed by statistical agencies and to ensure its more complete representation in the territorial (especially in the regions of Siberia, the Far East and the Far North), sectorial and social views. The number of families surveyed will be increased from 62,000 to 90,000, or by 45 percent. The department for the statistics of budgets and the research institute of USSR Goskomstat must immediately work out the organizational and program-methodological questions in expanding budgetary surveys in the country. It is also important for the statistical agencies to strengthen the coordination of the work in the statistical study of the social and demographic processes in the country.

USSR Goskomstat together with the AUCCTU and USSR Goskomtrud [State Committee for Labor and Social Problems] must provide for a systematic study of public opinion on social and economic questions. The statistical agencies have been granted the right to involve the appropriate organizations, educational institutes, scientific institutions and enterprise sociological services in the carrying out of surveys. In this connection, the statistical agencies need to work out measures for a broad study of public opinion. Using the experience available in the country on such work, the research institute of USSR Goskomstat needs, in turn, to work

out a program of specific measures. Information on public opinion will make it possible to raise substantially the objectivity of the analysis of social problems.

There are major tasks to be resolved in the area of international comparisons of economic and social indicators. The system of statistical agencies will centralize all statistics on foreign economic relations. It is necessary to bring about a serious improvement of the systematic study of the world economy, the priority directions of technical progress and the organization of production in foreign countries.

USSR Goskomstat must give the goskomstats of the republics information on the development of the economy of foreign countries as well as methodological materials on this question.

The decree of the CPSU Central Committee and USSR Council of Ministers obligates the statistical agencies to take measures to improve the organization of regional statistics substantially, for the role and responsibility of the councils of ministers of the union republics and local soviets of people's deputies for the comprehensive social and economic development of the republics and regions are growing.

It is planned, in the first place, to ensure reliable and timely information for the management of the national economy at the rayon, city, oblast, kray and republic levels. It must characterize the work of the enterprises and organizations located in the corresponding territory regardless of their departmental subordination.

Secondly, USSR Goskomstat and the goskomstats of the republics must have complete regional information on the economic and social situation in their territories, on the course of local restructuring, and on the differentiation of the development of the national economy and its provision with physical and manpower resources.

It is clear that one must establish the corresponding ABD's [expansion not given] on the basis of the descriptions of the regions and cities and a systematic updating of information. For this purpose, it is necessary to work out a thorough system of indicators of the economic and social development of union and autonomous republics, krays, oblasts and rayons with a different degree of detailing and aggregation of these indicators. It is important to provide for complete information on the indicated regions as well as for the unified content of indicators and their comparability. The forms of reporting, programs for its development and organization of information flows must meet these requirements.

One should also thoroughly examine the questions of the mechanized processing of information by regions and the economic analysis of materials and the time of their presentation. This program must be based on a broadly introduced network of personal computers, communications channels and the corresponding software. It is

essential to formulate recommendations for local statistical agencies on the economic analysis of regional statistics and, in this connection, to organize the retraining of personnel, especially at the rayon level.

A developed regional statistics will permit a general improvement of the economic analysis of social and economic processes. The corresponding analytical reports must devote adequate space to information on the development of rayons, cities, oblasts and the ASSR.

The decree of the CPSU Central Committee and USSR Council of Ministers of 17 July 1987 directs the national statistical agencies to raise the theoretical level, complexity and practical significance of scientific investigations of statistics as one of the most important conditions for improving the quality of information and social and economic analysis. These investigations must be carried out in accordance with current requirements, with extensive use of economic-mathematical methods of processing statistical materials and forecasting, and with an objective reflection in the statistical indicators of the special features of the contemporary stage in the social and economic development of the country and of the strengthening of the management mechanism countering expenditures.

The raising of the level of scientific investigations of statistics, especially in connection with the improvement of analysis, requires a substantial restructuring of the work of the research institute of USSR Goskomstat. It is necessary without delay to review the subject of current and long-range plans and to have it correspond with the resolution of the tasks in the restructuring of national statistics. It is essential for the research institute to raise not only the level of scientific research and developments, striving to introduce them in the system of statistical agencies (which will doubtless be aided by the cost accounting relations to which scientific institutions are moving), but also (together with directorates and departments) the level of the content of economic records and reports.

We note that a focus on petty topics and superficial analysis caused by the isolated nature of the materials used now prevails in analytical work, both in the central system of USSR Goskomstat and the goskomstats of the union republics as well as in local statistical agencies. Banality and conservatism have taken root in the processing and presentation of materials. There is frequently repetition of the outlines of reports and the same texts are used (changing only the figures, ministries, oblasts, etc.) and errors are made, indicating a lack of responsibility.

Beginning with the coming year, it is necessary for the national statistical agencies together with planning authorities to present annual reports on the economic situation in the country, union and autonomous republics, krays and oblasts, sectors of the national economy and complexes characterizing the general state of the



economy and the changes taking place in it and including measures for its further development. It is also necessary to develop surveys of the most important aspects of economic and social life. The question of the organization of this work needs to be resolved immediately. It is expedient to send the corresponding recommendations to all statistical agencies that, together with planning authorities, must review the programs of such reports, the time of their release, and other matters.

The systematic interpretation of social and economic processes and their reflection in analytical materials requires a comprehensive strengthening of the consolidated subdivisions in the entire system of national statistical agencies. They are called upon to be real organizers and primary creators of analytical materials, especially on intersectorial questions.

It is above all a matter of balance subdivisions. They are not on top of the situation either in analysis or in the development of systems of indicators (the balances are not organically linked with basic reporting and are not very current), are isolated from the labor collective of the central system of the goskomstats, and have no influence on the statistics at the oblast level. The most valuable materials on the balance of the national economy and, in part, on the intersectorial balance, are extremely inadequately used for analysis of the most important national economic proportions and the revelation of the trends and inherent laws in the development of social production. There is little study of intersectorial and interterritorial relations in the national economy or of questions involving the intensification and efficiency of social production.

It is probably necessary in the consolidated subdivisions to establish groups of the most qualified specialists for macroeconomic analysis as has been done, for example, in the AzSSR Goskomstat, where the section for complex economic analysis prepares meaningful reports on the development of the republic's economy.

The functional sectorial subdivisions must also provide for more profound economic analysis. Their specialists need to feel the pulse of the sector under treatment at all times, know its state and the course and trends of its development at any particular moment, and influence bottlenecks in time. Only under such an approach is it possible to talk seriously about the competence and professionalism of workers and about the qualitatively new level of the analysis that they carry out. And in the case at hand, the characterization of sectorial problems must be determined by their complexity and systematic nature.

Experience shows that the depth of analysis and the discovery of the essence of economic phenomena, their causes and consequences under contemporary conditions are achieved through extensive utilization of regional statistics and the materials of selective surveys and censuses and through the study of public opinion

and samples with an indication of addresses, persons and facts. Thanks to such data, USSR Goskomstat was recently able, for example, to analyze in more depth and prepare express reports on such provocative questions as the organization of public catering in schools for general education and in vocational and technical schools, the work of children's homes and boarding schools, services to the very old and invalids, etc.

The very rich materials of budgetary surveys are not yet being used adequately in complex analysis. For the analysis of social-class and national relations and demographic processes, it is necessary to make more extensive use of the materials of the All-Union Population Census of 1989. And now the task of national statistical agencies is to prepare and carry it out on a profoundly scientific methodological basis and at a high organizational level taking into account domestic and international experience.

The economic analysis of data on public health, culture, everyday life, and leisure will not be complete without the materials of population polls and selective surveys and the study of public opinion on the situation in these areas.

The practice of releasing express information has shown how important it is to raise the promptness of the presentation of analytical materials and to ensure their economic content and conciseness. This must be fully realized in all economic work and especially in preparing current reports on the course of the fulfillment of state plans. Everywhere it is necessary to strive to reduce the time for the release of such reports, that is, to present them no later than the fourth or fifth day after the end of the reporting period, which will ensure the prompt utilization of the information contained in them by managing agencies for administrative purposes. This, of course, is linked with the time for the preparation and transmission of the reports. It must be noted that a considerable acceleration has recently been achieved in the development of statistical materials on industry, trade and other areas. It is essential, however, to continue to reduce the time for the processing and transmission of statistical information on finances and prices, capital construction, labor and wages, material and technical supply, and the national economic balance.

To ensure the systematic nature and promptness of analysis, it is necessary to be resolute in reorganizing the technology of statistical and economic work. On the basis of the gradual computerization of statistics, the establishment of general and local data bases, the direct access of economists to them, and the automation of the calculations of analytical indicators, it is possible to raise the level of economic analysis substantially and to give economists more time for creative work.

USSR Goskomstat and the goskomstats of the union republics must increase their interaction with other central economic authorities in the questions involved in

a comprehensive resolution of social and economic problems and the provision of planning and administration with the necessary statistical data and forecasts. Great importance in this work will be attached to the Economic Council, which will be entrusted with the review of major national economic problems, the formulation of comprehensive forecasts of the prospects for the development of the economy and its individual areas and regions, and the elaboration of coordinated positions in the formulation of the drafts of state plans for economic and social development and the implementation of measures to improve the economic mechanism.

The second main direction in improving the work of statistics in the country determined by the mentioned decree of the CPSU Central Committee and USSR Council of Ministers is that of **regulating reporting in the national economy and guaranteeing its reliability**. USSR Goskomstat is given complete responsibility for the establishment and functioning of a statistical information system at the national, sectorial and regional levels on the basis of a single methodology. This obligates the statistical agencies, in accordance with the restructuring of the economic mechanism, to improve the entire system of state reporting in the national economy and to work continuously for its rationalization and further curtailment and simplification.

Experience shows that despite the sharp reduction of reporting forms carried out last year, they still contain quite a lot of superfluous and redundant information. This is especially true for the information bases of sectorial and regional ASU's [automated management systems]. The statistical agencies of all levels need to analyze continuously the volumes of statistical information (these being real volumes, in megabytes), oppose their unjustified increase, and free enterprises and organizations from the presentation of superfluous data.

USSR Goskomstat, together with the ministries and departments, has until 20 November of this year to review the existing system of statistical reporting as applied to the new management conditions and to reduce and simplify it. In December, it must report to the USSR Council of Ministers on the work that has been done. It is essential to analyze critically all forms of statistical reporting, including reports collected and accumulated in the sectorial ASU's, which will now be reviewed and confirmed by USSR Goskomstat as sectorial reporting.

Unfortunately, illegal reporting is still widespread in the country, although a number of decisions have been made in relation to it. It would be possible to present quite a few examples of ministries being distracted by the collection of data "just in case" and of the introduction of daily summaries, reports and other documents not related to planning indicators.

The statistical agencies revealed 28,000 forms of illegal reporting in 1986 alone and 10,000 forms in the first half of this year. There is much of such reporting in the systems of USSR Gosagroprom, the USSR Ministry of Railways, Tsentrsoyuz, the USSR Ministry of Trade, and the ministries of the construction complex.

The status of the state committee now permits statisticians to fight actively against the red tape and paper shuffling that hinder the development of the independence of enterprises and organizations. "Categorically prohibit all state administrative agencies and party, soviet and public organizations from demanding and enterprises and organizations from presenting any summaries and reports not foreseen by state reporting" stresses the indicated decree of the CPSU Central Committee and USSR Council of Ministers. The statistical agencies must be more resolute in combatting illegal reporting.

This year it is necessary to rework all operative instructions on the drawing up of reports, making them conform completely to the requirements of the new economic mechanism and the law of the USSR "On the State Enterprise (Association)" and to reduce their number drastically. Infringement on the rights of enterprises is not admissible in a single instruction.

In the system of measures being taken to restructure the work of statistical agencies, an important place belongs to the campaign for the reliability and higher quality of statistical information. There continue to be cases of inflated and distorted reporting, although the situation has improved somewhat in particular regions. This was helped by the decree of the CPSU Central Committee passed in October 1986 "On the Unsatisfactory Implementation of the Decisions of the CPSU Central Committee on the Elimination of Deception and Inflated Reporting by the Moldavian Communist Party Central Committee, the Kirovograd Obkom of the Ukrainian Communist Party, and the USSR Ministry of the Automotive Industry."

But the situation remains very alarming in many republics and oblasts. Checks this year revealed inflated reporting at 8.9 percent of the facilities in Tajik SSR, 9.2 percent in Sverdlovsk Oblast, 10.5 percent in Uzbek SSR, 10.8 percent in Kharkov Oblast, 16.6 percent in Kiev, 18 percent in Kabardino-Balkarskaya ASSR, 19.7 percent in Karakalpakskaya ASSR, and 31.3 percent in Samarkand Oblast.

The statistical agencies are entrusted with the coordination of the work in checking state reporting and combatting inflated reporting and deception. More and more, the primary task is the cooperation of all controlling agencies in this work, which must be carried out under coordinated plans with a drastic reduction in the number of audits.



It is necessary to practice more extensively the joint participation of the workers of statistical, financial-credit and other agencies in control surveys of the same enterprises and organizations. If shortcomings are revealed in the accounting and reporting, then it is necessary to strive persistently to eliminate them as well as to compensate the state for losses and to punish the guilty individuals. This, in turn, also requires improved cooperation with law enforcement agencies. Provision has now been made not only for legal but also for economic controls in the campaign against inflated reporting and deception.

If instances of distorted reporting are revealed, then the statistical agencies have the right to give the corresponding enterprises and organizations mandatory orders that they make the necessary corrections.

It is necessary for the goskomstats to introduce at their board meetings the practice of hearing the reports of the managers of ministries and departments on the state of accounting and reporting and their observance of reporting discipline as one of the most important conditions for ensuring the reliability of information and the improvement of efficiency.

In the campaign against inflated reporting, it is necessary to make wider use of the mass media, publicizing all cases of inflated reporting and deception and describing them as antisocial phenomena.

The national statistical agencies have been given the task of **substantially expanding the publicity of statistical information** as one of the extremely necessary directions in the democratization of Soviet society and the involvement of the working people in the management of state affairs. For this purpose, being guided by the Leninist instruction on the necessity of bringing statistics to the masses, "...of popularizing it so that the working people themselves can gradually learn to understand and see how and how much it is necessary to work and how and how much one can rest, so that the *comparison of the practical results* of the operation of individual communes will become the object of general interest and study....," it is necessary to activate the information and propaganda work of statistical agencies.

This is one of the most important tasks. The expansion of the publication of statistical materials will make it possible to propagandize the achievements in the social and economic development of the country better, to concentrate the attention of the broad public on existing shortcomings and their elimination, and to disarm the many "Sovietologists" in their attacks against the Soviet country.

Work has already begun in this direction but it is necessary to develop the recently introduced new form of operational information reports—the press release intended for newspapers, journals, radio, television and

other mass media, in which data are provided on economic and social development and different aspects of public life. The content of published statistical collections has been revised: they now include an additional series of data not previously published. It is necessary to expand press reports on the work of the national economy and the publication of statistical materials in the journal *Vestnik Statistiki*. It is essential to take more drastic measures in improving the diverse methods of informing the population, especially oblasts and rayons.

For the purpose of raising the effectiveness of economic research, national statistical agencies must improve the provision of research organizations and educational institutions with statistical materials.

The regular holding of press conferences as well as statements in the press, radio and television on problems in statistics must become part of the practice of statistical agencies.

An Information Publishing Center has been established in the system of national statistics. It will be the organizing link in the entire multifaceted information and propaganda work in the area of statistics and will function under cost accounting principles.

It is also essential to improve the work of the journal *Vestnik Statistiki*, where it is necessary to publish materials systematically on the course of restructuring in the national statistical agencies and on the resolution of its multifaceted tasks under contemporary conditions. The journal must help to expand the publication of statistical information.

In examining the question of measures to bring about a fundamental improvement of statistical work in the country and in noting the importance of this work for the restructuring now being carried out, the CPSU Central Committee Politburo stressed at its meeting on 2 April 1987 that in realizing the indicated measures much attention is being paid to the **further strengthening of the material-technical base of statistical agencies and to the improvement of the training of personnel.**

The technical reequipping of the computer network will be continued in the years 1987 through 1990. Of special concern to the national statistical agencies is the provision of equipment to rayon statistical agencies, where much of it is deteriorating. It is planned to provide them with personal computers of type ES-1840 by 1990. The All-Union Research and Planning Institute for Accounting of USSR Goskomstat has been entrusted with the task of completing the development of applied software for the indicated computers this year so that all statistical tasks can be resolved at the rayon level. This is the number one job for the institute, a kind of state order whose fulfillment is a matter of the honor of the collective. The board of USSR Goskomstat will judge the effectiveness of the work of the institute according to its

results. And the personnel administration must organize the training so that all workers at the rayon level will master these machines in a very short time.

An extremely important question in the automated system of national statistics is that of communications channels. They must become an integral part of the technology for processing information. The task in the short term is to establish reliable communications between all computer centers in the national statistical system. By 1990, all rayon statistical agencies will be covered by a teletype network and all oblast statistical agencies by separate telephone channels. And it is not just a matter of assigning channels but also of their integration through means of computer technology at all levels and of the establishment of a single computer network that will make it possible to realize a qualitatively new technology in the collection, transmission and processing of information.

It is essential to develop the work in the establishment of ABD's [expansion not indicated] and in the transition to the creation of distributed data banks that will make possible a qualitative improvement in the information servicing of all subscribers to national statistics. At the computer centers with the appropriate technical base, it is necessary to begin practical work on the establishment of banks for statistical sectors and to activate the introduction of ABD's for posting forms of storing information (registers of enterprises, construction projects, cities, and the like). The development of the automated system of national statistics must also be aimed at its integration with the sectorial automated management systems and automated management systems of enterprises and ministries, which will permit an expansion of the limits of the utilization of information.

An important event in our system was the **establishment of single organizational forms of agencies** and statistical administrations at the oblast (kray and ASSR) level and statistical departments at the rayon and city level. The work of the oblast statistical administrations is implemented under cost accounting principles as applied to the USSR law "On the State Enterprise (Association)." Accordingly, there is a significant increase in the role, responsibility and initiative of the labor collectives of these agencies in the resolution of questions in production and administration, the development and realization of plans, and in the improvement of the conditions of the remuneration of labor and way of life of workers. At the same time, and this is very important, the oblast administrations and rayon statistical departments retain all the rights of administrative authorities and not only retain them but have substantially more rights.

It is necessary for the goskomstats of the union republics to resolve questions immediately in the establishment of the working conditions of the oblast administrations and rayon statistical departments.

The resolution of the tasks in the restructuring of statistical work in the country requires a serious improvement in the level of work with personnel in the system of statistical agencies, the elimination of serious shortcomings here, the improvement of the selection, disposition and training of personnel, the strengthening of requirements when providing statistical agencies with highly qualified personnel, the establishment of the necessary working and living conditions for them, and the provision of a permanent increase in the qualifications of personnel and the improvement of their occupational training. There will now be more possibilities for providing the staffs of the new structure with specialists of a higher level.

Major shortcomings must be noted in the work with the personnel reserve; it essentially does not satisfy the demand for them. On the average for the goskomstats of the republics, one out of three managers is not appointed from the reserve. The reserve is utilized particularly poorly in the statistical agencies of the Uzbek SSR, Azerbaijan SSR, Moldavian SSR, Tajik SSR and Turkmen SSR. To replenish the reserve, it is necessary to make wider use of the training of personnel in the National Economic Academy under the USSR Council of Ministers, the Academy of Social Sciences under the CPSU Central Committee, specific postgraduate courses of study, reserve schools and elsewhere. It is necessary to be bolder in promoting workers who possess the essential political, practical and moral qualities and who are capable of successfully carrying out the course of restructuring statistical work.

Not enough is being done to renew personnel through young specialists graduating from VUZ's and tekhnikums. This mainly has to do with a lack of organization in everyday life. Also felt is the preponderance of manual labor in the processing of information, which leads to monotony and uniformity in the work instead of to the creative comprehension of materials, economic correlations and analysis of information.

It is essential to eliminate serious shortcomings in raising the qualifications and in the training and retraining of personnel. The main administrations for the training of personnel, republic goskomstats and local authorities organize courses of study out of touch with practical matters and tasks, as is indicated by the curricula; the content of many of them has not changed for years.

A substantial restructuring of the network of educational institutions is now necessary. It is expedient to establish a unified system of educational institutions for raising the qualifications and retraining workers in recording and statistics. The MIPK [expansion not given] for recording and statistics of USSR Goskomstat must be the center of this system.

Personnel services in the system of the republic goskomstats are in need of serious improvement. At times they do not delve into the essence of matters and do not set

the tone in the extremely complex work with personnel. There is much formalism and superficiality here. Too little attention is being paid to work in preventing cases of immoral behavior, embezzlement of material values, violation of labor discipline, and misuse of office. It is necessary for the personnel administration of USSR Goskomstat to restructure its own work without delay so as to resolve personnel matters in the system of national statistics in accordance with contemporary requirements.

It is essential not to forget about the **social development of labor collectives** even for a minute. There are major shortcomings in this work. Deadlines for the construction of social and production facilities are often not met and measures are not being taken to establish normal production and housing-domestic conditions for workers. The system has about 21,000 families in line for obtaining housing space and 8,000 want to build cooperative apartments. Statistical agencies need more than 14,000 places in children's preschool institutions, 60,000 in Pioneer camps and boarding schools, 11,000 in youth dormitories, and 17,000 places in dining rooms. It is essential for the managers of local statistical agencies to show more persistence in resolving these problems, especially since there will now be more opportunities. But it should be noted that the capital investments allocated to the strengthening of the material-technical base are being used poorly. In the last five-year plan, 71 percent of these investments were assimilated in the country's system of national statistical agencies (construction and installation work) and 70 percent in the Kazakh SSR (construction and installation work). They are being assimilated with great delay in this five-year plan. Having reviewed the question of the course of capital construction in the system of statistical agencies in the RSFSR and Moldavian SSR on 10 August of this year, the board of USSR Goskomstat noted their completely unsatisfactory work in this area. For the first 6 months of this year, they fulfilled the plan for capital investments by 47 and 43 percent, respectively. The computer center in Astrakhan has been under construction since 1975, that in Kishinev since 1976, and those in Ufa and Leningrad since 1979.

It is now essential to make efficient use of the funds for the development of production and for the social development of enterprises in the system of national statistical agencies and to strive for the organization of cooperative housing construction.

Questions in social development must be put under the special control of public organizations and it is necessary to take strictly to account those who fail to resolve them.

The planned simplification of the structure of the central staff of the goskomstats must play a positive role in improving the work of national statistical agencies and concentrating efforts on its most important areas. The number of their structural subdivisions will be reduced

by about half. The new structure will be made as much like the structure of the staffs of the Council of Ministers and economic authorities as possible.

It is well known that the economic departments must improve their work while simultaneously reducing their staffs. The same situation also applies to the system of USSR Goskomstat. Their subdivisions must be staffed by experienced, competent and creative specialists prepared to resolve questions in the restructuring and improvement of statistics independently.

In outlining the tasks in the fundamental restructuring of statistics in the coming years, thought should also be given to the prospects for the development of Soviet national statistics through the year 2000. Many acute and urgent problems, both theoretical as well as practical, have accumulated. This is evidenced by the many appearances of scientists in the press and by the statements of practical workers. In 1988, when the country will mark the 70th anniversary of Soviet national statistics, it would be possible to carry out an All-Union Practical Scientific Conference on problems in statistics. It is advisable to entrust the scientific research institute of USSR Goskomstat with the program of this conference.

The statistical agencies are entering into a period of practical work in restructuring national statistics and increasing its role in the system for managing the national economy. It will not be easy. But, as M.S. Gorbachev stressed at the June (1987) of the CPSU Central Committee Plenum: "We have the reason, power and ability to work in a Leninist way under the conditions of perestroika, not being enraptured by every success in it but also not becoming despondent and especially not panicking when some negative phenomena appear. It is necessary to learn the complex and dialectically contradictory art of perestroika."

USSR Goskomstat has worked out Measures for the Fundamental Improvement of the Work of Statistics and the Fulfillment of the Decree of the CPSU Central Committee and USSR Council of Ministers of 17 July 1987. The appropriate measures taking into account the special features in the development of the economy of regions must be worked out, discussed in labor collectives and confirmed by all national statistical agencies. These documents must be a program of action for the workers of statistical agencies and be under the constant control of public organizations.

It is essential for the party committee of USSR Goskomstat and the party organizations in the system of statistical agencies to concentrate the attention of personnel on the resolution of the key problems in statistics determining its fundamental improvement. This work must



be done in an atmosphere of broad glasnost and development of criticism of shortcomings. Party, trade union and Komsomol organizations should carry out work in the collectives aimed at the practical implementation of the indicated measures.

The national statistical agencies will fulfill with honor the task set for them by the party and government in the fundamental restructuring of statistics.

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### Regional Development

#### Concern for Lake Issyk-Kul Figures in TPK Planning

18200010 Frunze SOVETSKAYA KIRGIZIYA in Russian 23 Oct 87 p 2

[Article by D. Layliyev, chairman of the interdepartmental scientific council on problems of the Issyk-Kulsko-Chuyskiy TPK and professor, and Ye. Timonin, deputy chairman of the commission on the study of productive forces, natural resources and environmental protection of the Kirghiz SSR Academy of Sciences and candidate of economic sciences: "In the Bundle of Problems: Accelerate the Establishment of the Issyk-Kulski-Chuyskiy TPK"]

[Text] In their letters and verbal wishes expressed to the newspaper, readers are asking the editor's office not to forget about the problems in the conservation of Lake Issyk-Kul and in the development of the rich resources of the neighboring rayons. A republic practical scientific conference held in the spring in Frunze was dedicated to these same questions. The main subject of the conversation was the formation of the Issyk-Kulsko-Chuyskiy Territorial Production Complex (TPK). Today economic scientists exchange opinions on this account.

Our republic has tremendous natural and manpower resources. At the present time, the economic potential of Kirghizia is concentrated mostly in the Chuyskaya and Ferganskaya valleys. The possibilities for their further development are limited, however. Here there is already a shortage of water and other natural reserves. In addition, the space for locating new enterprises, housing and other facilities is not unlimited.

One of the main tasks in the acceleration of the economic and social development of the republic is the development of the productive forces of the eastern part of Kirghizia on the basis of the complex utilization of natural resources and the formation of a large Issyk-Kulsko-Chuyskiy TPK of union importance. The practical realization of this task will be the beginning of a qualitatively new stage in the development of the republic's productive forces.

The eastern part of Kirghizia belongs to the region of new economic development. This extreme region for human habitation does not yet have a developed economic and social structure. During the last five-year plan, scientific research was carried out here on physical-geographic, seismic, engineering-geological, biological, water, ecological and other problems. Rich mineral raw material, land and water, and hydroelectric resources have been found here. And they can be utilized most efficiently under the conditions of a territorial production complex, where the need for specific capital investments is considerably less than in the selective and individual development of natural resources.

These riches are the core foundation for the development of the complex, and Chuyskaya Valley with its developed industry is the material and production base for the development of Vostochnyy Priissykkulye. Four directions are the basis for the formation of the Issyk-Kulsko-Chuyskiy TPK: the transfer of part of the flow of contiguous river basins to stabilize the level of Lake Issyk-Kul and to irrigate the newly assimilated lands; the further development of the resort region; the construction of hydroelectric stations and also enterprises for the extraction and complex processing of mineral resources and raw materials.

Ecological problems give rise to serious concern. The ecosystem of Lake Issyk-Kul is worsening in connection with the fall in the lake's level. If this trend continues, then in the foreseeable future the shortage of water will double and the shoreline will recede by 500 to 1,000 meters. This will inevitably result in economic difficulties and the loss of the best sandy beaches, fish spawning grounds and breeding and wintering sites for water fowl. Issyk-Kul is an ecological system with all the interrelationships. And they need intent and comprehensive study. Is this being done as it should? No. The efforts of biologists and other scientists are aimed basically at describing the state of nature and not at developing forecasts. As a result, we still do not have a forecast of the possible changes in the ecological conditions of the natural environment of the lake basin in connection with the delay in the transfer of part of the flow of the Karkara River and essentially there are no other sources.

The fall in the level of Issyk-Kul is progressing every year. Through measures to stabilize the level of the lake and to improve the water supply to the economy of Issyk-Kulskaya Oblast, it is planned to shift immediately to a water-saving technology in irrigated farming with a limitation of the areas of irrigation to the existing level and, as a temporary measure, to transfer part of the flow of the Karkara River. More than 2 years have passed but only recently did the USSR Ministry of Land Reclamation and Water Resources decide to transfer 180 million cubic meters of water annually from the Karkara to Lake Issyk-Kul in the 12th Five-Year Plan. Work is already under way. But capital investments are not adequate and no one is pleased with this pace.

It is clear that the construction of a canal and other structures for the transfer of water in a short time is not a simple task. But the subdivisions of the USSR Ministry of Land Reclamation and Water Resources could accelerate the construction. For it is a matter of saving a unique lake. In part, one can help today by shifting the irrigation of the agricultural lands of Priissykkulye to the mechanical means of irrigation. This not only would raise the efficiency of the irrigation systems, which is extremely low, but also would protect Issyk-Kul against the influx of mineral fertilizers and toxic chemicals. The USSR Ministry of Land Reclamation and Water Resources, however, is not yet resolving this question completely.

In accordance with the decisions of the 27th CPSU Congress, it is planned in the 12th Five-Year Plan to begin the complex utilization of the water and power resources of the Sara-Dzhaz River. The construction of the Sara-Dzhazskiy Ore Enrichment Combine is continuing. Capital investments are to be five times greater in the current five-year plan than in the last. And this requires an increase in the capacities of the contract organizations working here.

To a considerable extent, the successful development of the natural resources in the eastern part of the republic depends on the construction base and the production and social infrastructure. It is essential to expand the construction base significantly through the reconstruction and establishment of specialized enterprises for the issue of building materials and structures. The republic's Gosstroy and other departments, however, are not taking decisive measures for this.

There are also difficulties in introduction. The mining engineers of the republic Academy of Sciences have worked out a rational order for the working of deposits with a differentiated mapping of ore reserves, on the basis of which the Sara-Dzhazskiy Ore Enrichment Combine is being built. It makes possible an increase in the balance reserves of raw material by 12 to 18 percent. But the republic's Gosplan and Geology Administration were indifferent to the proposal of the scientists promising a major economic effect. Serious blame should also be given to the republic's Gosagroprom.

A number of institutes jointly worked out and tested a method for the utilization of the waste water of the city of Frunze for the irrigation of lands planted in fodder crops. The results have been good but the agricultural authorities are showing no interest in the utilization of this major reserve of water for the irrigation of land. In the opinion of specialists, the irrigation system in Kirghizia is one of the worst in the country. Its efficiency ranges between 0.4 and 0.5. Water losses in irrigation are tremendous. The result is soil erosion and a shortfall in the yield of agricultural output. In essence, we obtain about half, if not less, of the possible harvest. The potential possibilities of the utilized varieties of agricultural crops and livestock strains are significantly greater.

A substantial reserve for increasing the harvest can be obtained through the introduction of intensive technologies for the cultivation of crops and the production of output in animal husbandry.

The position of the leaders of Gosagroprom is also incomprehensible with respect to the utilization of mineral waters. What water do those resting at Issyk-Kul and the local population drink? Ak-suu, dzhahal-abadskaya, narzan, etc. In general, imported water. Meanwhile, more than 25 major sources of mineral water whose composition is not inferior to that of imported water have been discovered in the oblast. But today only eight locations are operating, whereby only 5 to 10 percent of the water drawn from them is utilized, the rest being wasted. And this is despite the fact that the republic occupies one of the last places in the country in the consumption of mineral water.

The importance of Issyk-Kul as an all-union health resort is increasing all the time. More than 350,000 people rest here annually and many times that number want to come. Most boarding houses operate on a seasonal basis. As a rule, the builders of new boarding houses, houses of rest and other health institutions are located beyond the boundaries of Issyk-Kulskaya Oblast or the republic, and therefore there is practically no control of the course of construction. The facilities are built over decades and the clients do not participate in the development of the services of water, power and heat supply, motor transport and highway maintenance, community services, public catering, and the improvement of service in the resort region.

It is time to put an end to such arbitrariness and to carry on the further resort construction comprehensively, ensuring a unified technical, architectural and organizational policy. This is possible through the establishment of an all-union administration of the resorts of Issyk-Kul, which would fulfill the function of a single client and planner.

The question of the specialization of agriculture in Priissykkulye has not yet been decided. Just as they did many years ago, here they give preference to the cultivation of grain crops. Is this proper? Clearly it is not. Resting people consume fruits and vegetables brought in mainly from Osh Oblast and Uzbekistan. In our view, it is necessary to bring agricultural production in the oblast as near as possible to the needs of the resort region. For this purpose, one must erect greenhouses, storage places for fruits and vegetables, and enterprises for their processing. The republic's Gosplan and Gosagroprom must help in the resolution of these questions.

With the assimilation and comprehensive utilization of its rich natural resources, the republic will have a large recreational complex in the Asian part of the country, will become a supplier of metals in short supply in the country, and will reserve for itself priority in supplying seed of sugar beets and alfalfa to other union republics.



The establishment of the Issyk-Kulsko-Chuyskiy TPK will serve as an impulse for the accelerated development and improvement of the entire national economy of

Kirghizia and will significantly raise its real contribution to the economy of the union as a whole.

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## Agro-Economics, Policy, Organization

### Kurgan Oblast Economic Experiment Results Disappointing

18240014 Moscow SELSKAYA ZHIZN in Russian 15 Oct 86p 2

[Article by V. Stakheyev, correspondent: "In the Nets of Formalism"]

[Text] Two years ago Pritobolnyy Rayon and six other rayons in various oblasts in the RSFSR became participants in an economic experiment. The final goal was for each farm to achieve self-support [samookupayemost] and self-financing. It was assumed that this would give people an interest in cost accounting, make them careful about state and kolkhoz monies, skillfully use resources and quickly pay off expenses. In short, they would move from words to deeds regarding thrift, put their economies on their own feet and then steadily live on their own resources.

The experiment provided the rayon extra subsidies for profitable operations. Markups of up to 80 percent of purchase prices were given to kolkhozes and sovkhoses and 35 million in debts were written off.

What are the results from the two years of work at the RAPO? Unfortunately, they are not comforting. Farm profit rates remained at the 9 percent level. Three farms managed to finish the year with losses. These amounted to 668,000 rubles at the "Pritobolnyy" Sovkhoz. Indebtedness increased by more than 4 million rubles.

One can spend a long time calculating how much money each of the 20 farms lost. In the long list of minuses three figures are literally stunning. From the sales of low weight livestock 4.6 million rubles were lost in a year. Low quality milk caused another 767,000 rubles in losses. Here is the last figure: losses from animal deaths during the year reached 500,000 rubles.

It is clear even to a school child that the problem here is the inability or lack of desire to put things even into elementary order. It is no accident that at a recent rayon soviet session Yu. Tebaykin, chairman of the RAPO Council, admitted that if such operations were continued then not even the highest state markups could save kolkhozes and sovkhoses from economic breakdown.

The association chief was not the only one to so describe the situation. I scanned several reports and went through the newspaper files: economists, zootechnicians and farm managers are urgently talking about the difficult situation in animal husbandry, citing specific losses, excessive feed consumption and the poor condition of animals. However, it seems as if this entire discussion is about other farms. One does not hear a word or read anything about exactly how to punish those responsible for these animal deaths and what must be done and is

being done to eliminate losses. Doesn't elementary economic order require pointing out those who are zealous? However, at the Zvezda Kolkhoz the machinery operator K. A. Ivanov has been operating a tractor for 10 years without a major repair. Taking care of equipment is not only a moral duty, but quite beneficial. Alas, few besides Korney Andreyevich know about this.

So far the experiment has not caused farm operators to more deeply study economics. Such a critical view is very much needed. At first glance, last year was not too bad for the Kolkhoz imeni Kalinin: it had 239,000 rubles in profits. Except for grain, production costs did not exceed the plan. But, what happens when one looks deeper? What would kolkhoz income be if it were not for the experimental markups? Alas, the farm would lose money, as it has done in all past years.

The roots of economic lagging at kolkhozes are in managers' and specialists' formal and indifferent attitude to work. Ten units on cost accounting have been set up here and a check system for accounts introduced. However, economic tools are not being developed. There are no rules on the use of checks at the kolkhoz. The chief specialists and managers at units on cost accounting are not seriously engaged in plan compilation and limit determination.

There is a similar picture at the Kolkhoz imeni Kravchenko. Not a single unit here has achieved savings in direct expenses even though the farm has introduced progressive forms for the organization of labor. There are family and brigade contracts and intensive labor collectives and the flowline intensive method for equipment use has been introduced in crop production. However, these are only formally present. Nobody here knows about a well known truth that form does not always determine content. An anticost mechanism will not work on its own if everybody's work is not goal directed and thoroughly planned and there is not a principled attitude towards shortcomings.

It is just these qualities which rayon administrations are lacking. Everybody knows that the station technical services to animal husbandry "percents" uncompleted work and makes out fictitious order forms. Nobody is in a hurry to put a stop to this outrage. Practically none of the 20 farms in the RAPO have limits on service vehicle gasoline consumption, nor do they protect fuel and lubricants. These cases are only noted, nobody does anything to put an end to them.

At most farms animals are not weighed before being slaughtered for intrafarm needs. Nobody is rushing to close this loophole for improper use.

And, something which is generally not well known by rural dwellers: Food service workers at many kolkhozes and sovkhoses in the rayon are complaining that there is

nothing which to prepare vegetable appetizers and garnishes to serve farm workers. The farms have no potatoes, cabbages, beets or carrots. Not having even the simplest selection of vegetables, suppliers come to Kurgan and purchase garden vegetables at literally three times the going price. Year after year kolkhoz and sovkhos economists count up the losses.

We had a long talk about the economic experiment at the Pritobolnyi RAPO with L. S. Kulikov, first deputy chairman of the oblast agroprom. Leonid Stepanovich blamed the Siberian Department of VASKhNIL [All-Union Academy of Agricultural Sciences imeni V. I. Lenin] and economists in Moscow, which, he said, were obligated to help the experimental RAPO. However, he said nothing about what the oblast agroprom itself had done or about its attitude towards the experiment.

Leonid Stepanovich began to make references to Pritobolnyy Rayon's weakness, to its being incorrectly chosen for the experiment and that in general there were no special reasons for concern. I had formed a different opinion about the experimental RAPO. Of course, it needed help from the oblast agroprom. However, first of all, it needed to make a strict accounting of itself.

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#### **Agro-Industrial Combine Banking, Credit Relations Examined**

18240017 Moscow *EKONOMICHESKAYA GAZETA* in Russian No 38, Sep 87 p 11

[Article by A. Proskurin, deputy director of the APK [Agro-Industrial Complex] agricultural credit administration of the Russian Republic Buro of USSR Gosbank and by G. Letunov, senior economist of the administration: "The Agro-Industrial Combine: Relations With Partners"]

[Text] The agro-industrial combines created in the RSFSR and other republics have become a type of training ground for the development of a perfected management mechanism. After all, the production, procurement, processing and sale of agricultural and high-quality food products are concentrated here on the basis of cost-accounting and self financing. How are things going for them?

The work results of the Kuban Agro-Industrial Combine of Krasnodar Krai and the Moskva, Ramenskiy and Kashirskiy Combines of Moscow Oblast, which began their operations earlier than the others, indisputably demonstrate the advantages of the new form of management. The integration of kolkhozes and sovkhos with service and processing enterprises achieves the balanced development of their production capacities, and enables them to avoid losses in branch meeting points and to introduce waste-free technology for processing all agricultural products. Last year these combines overfulfilled

the plan for the production of commercial products. Retail turnover of merchandise increased and total profit grew by 12 percent as compared to the preceding year.

Nevertheless, the opportunities given to agro-industrial combines to increase production volume and effectiveness are not being utilized fully. We still have not found a system of interbranch cost accounting that will direct the economic interests of all partners toward improving the end results of work of each of them and of the combine in its entirety.

The management of the economic complex as a single whole has given rise to the necessity to centralize a portion of the capital belonging to enterprises. In connection with this it has become widely practiced to withdraw into centralized funds a significant portion of the profits of enterprises that operates well. Let us look at some examples.

According to last year's results, Bogatishchevskaya Poultry Factory transferred 71 percent of its profits to the centralized funds of Kashirskiy Agro-Industrial Combine, and Rastovtsy Fattening Sovkhos—58 percent (4.2 million rubles, including the price supplements earned for the sale of livestock of increased weight to the state). Kuban Combine took 78 percent of the real profits from Industrialnyy Sovkhos. We feel that in this way extensive capital goes into the coffers of those who did not earn it.

Indisputably, a certain part of the withdrawn savings are of an income nature and are created thanks to better production conditions. Nevertheless, the utilization of these conditions requires labor efforts and precise adherence to technological discipline. The deprivation of a cost-accounting collective of a significant sum of achieved profits decreases its interest in increasing production and in improving production quality with fewest expenditures.

According to adequately adjusted calculations, in that same Rastovtsy Sovkhos there is a real possibility for significantly increasing the productivity of livestock by means of intensive factors and for improving other qualitative indexes. But with the existing system of profit distribution the collective has little interest in the sale of reserves.

In our opinion, in order to strengthen economic incentives and to improve intra-combine cost accounting, it is expedient to plan for the return to enterprises of a certain share of withdrawn capital. This can be done by means of utilizing a portion of the profits of those enterprises which implement the expansion and technical reequipping of production by means of the centralized capital belonging to the combine.

Another solution to the problem is also possible. For example, the combine may be given the right to provide enterprises (with a consideration of production conditions) with stable accounting prices for 5 years. The combine must calculate production according to them, and the profits that are created above and beyond these prices become a part of its income and will be utilized for general goals of the combine. Moreover, all of the enterprise's profits that are created according to accounting prices (with the exception of that which is directed into the budget) can be utilized by it for production and social needs. Temporarily-free capital can be borrowed by the combine on the condition that it is returned. Such guarantees allow enterprises to see the prospects for their development and must facilitate a strengthening of their business-like activeness.

It is also expedient to reexamine the system of double controls over the expenditure of the wage fund. At the present time this fund (the norm) is distributed to the enterprise and is controlled by the combine itself according to the production indicator for the corresponding type of production (services) in agriculture, the processing industry, contract and commercial operations and so forth. The use by the combine of the wage fund, which is distributed by the higher-standing organization, is controlled by the bank. Moreover, capital for wage payments is issued to the combine on the basis of production indexes for agricultural products. But after all the processing, supply, procurement, contractual and other enterprises which are part of the combine and which fulfill only the functions that are natural to them have their own work indexes. Moreover, the results of operations of processing and trade enterprises depend not only on ongoing agricultural production but also on transitional reserves and the supply of raw materials from enterprises which are not part of the combine.

For this reason the index of growth in the volume of procurement, processing, turnover of merchandise and building-installation work cannot objectively coincide with the growth in agricultural production output. Under these conditions control by the bank is deprived of an economic purpose and creates only an appearance of supervision. This is why bank control over the expenditure of the wage fund of agro-industrial combines should be relinquished while at the same time increasing the effectiveness of controls by the bank over the expenditure of these funds by subdepartmental enterprises.

It is necessary to improve the organization of credit relations with the bank. In essence the system that existed previously with regard to the extension of short-term credit to sovkhozes from a special loan account has been transferred to combines. The system inadequately takes into account the qualitatively-new organization of integrated production and the degree of independence, interest and responsibility for the end results of work. In essence, credit conditions are used to justify petty guardianship and bank interference in the operations of the

combine. A quarterly (and in some cases a monthly) examination of security of the loans issued to them is planned.

Moreover, the security of credit itself has been reduced to a technical examination of the availability of borrowed financial funds and expenditures whereas the most important thing should be a thorough and multifaceted analysis of the conditions which achieve the most profitable investment of credit and its return within an optimal period of time.

In addition, the utilization of a special loan account unifies credit economically, transforming it from a cost-accounting factor into a technical method of "instantaneous" satisfaction of the needs of an enterprise as regards monetary resources. This does not correspond to the requirement of intensive economic development, with the priority utilization of an enterprise's own capital under conditions of cost accounting and self-financing. The situation is exacerbated by the fact that a significant portion of the credit resources allocated to combines is not utilized during a quarter and drops out of the system of economic incentives.

In our opinion, the relationship between agro-industrial combines and the bank must be built on the basis of credit contracts, which would tie together mutual rights and obligations and which would foresee the strengthening of coordination in the search for a highly effective application of credit and a more flexible differentiation of preferential and penalty percentage rates.

It would also be expedient to do away with the examination of credit security and to issue credit from a simple loan account with the dispatch of the entire total of borrowed capital to the combine's current account. This must stimulate an economically-based determination of the size of loans, their effective use and return within an optimal period of time.

Precision in credit relations will correspond to economic management methods and will serve the development and strengthening of ties between the bank and the combine with the goal of achieving the highest end results by the latter.

A critical analysis of the economic-financial operations of agro-industrial combines must facilitate a more complete delineation of the possibilities of these organizations and the continued improvement of the economic mechanism within the system of the country's agroprom.

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### **Regional Development**

#### **RSFSR Gosagroprom Official Reviews Restructuring Progress**

18:40007 Moscow SELSKOYE KHOZYAYSTVO  
ROSSII in Russian No 9, Sep 87 pp 2-4

[Article by V. Naumov, first deputy chairman of the RSFSR Gosagroprom, RSFSR minister: "Effective Factors in Acceleration"]



[Text] The concept of the acceleration of the country's socioeconomic development that was worked out by the Communist Party at the April (1985) Plenum of the Central Committee and was fully approved by the 27th CPSU Congress demanded of agricultural workers and construction, service and processing branches associated with them a radical restructuring of the system of management and extensive introduction of progressive technologies.

Recently workers of the agroindustrial complexes of many oblasts, krais and autonomous republics of the Russian Federation have managed to significantly improve the state of affairs, to increase the production volume, and to earmark the main directions for a radical improvement in economic activity.

In 1986, as compared to the average annual indicators of the 11th Five-Year Plan, the gross output per hectare of agricultural land increased on farms of all categories by 11 percent, on kolkhozes and sovkhoses—by 15 percent, and the increase per one worker was 19 percent. The gross yield of grain increased by 19 percent, sugar beets—16 percent, sugar beets—16 percent, and potatoes—12 percent. The production of meat in slaughtered weight increased by 22 percent, milk and eggs—7 percent, and wool—2 percent. The number of kolkhozes and sovkhoses operating at a loss in the republic decreased during the year from 5,500 to 4,100 or by 23.6 percent, and the number of those operating with a profit increased from 19,000 to 20,400 or by 7.4 percent. The overall level of profitability of the farms reached 19.7 percent.

Construction organizations of the RSFSR Gosagroprom fulfilled last year's plan by 108 percent, 7 percent more than 1985. It is intended to introduce more of such facilities as residential buildings, children's preschool institutions, schools, animal husbandry premises, silage and haylage structures, and storage facilities for potatoes, vegetables and fruits.

All branches of the processing industry of the APK have fulfilled the annual plan for sales in monetary terms by 100.8 percent, and labor productivity here exceeded the planned amount by 2 percent.

The plan for commodity turnover was fulfilled by trade enterprises by 102.3 percent.

Many kolkhozes and sovkhoses are farming under difficult conditions this year. Nonetheless, because of the persistent and imaginative work of party, soviet and agricultural agencies, the majority of regions of the republic are successfully keeping up with the fulfillment of plans and are increasing their rates.

Positive changes are taking place in rural areas. The growth of the real incomes of the population, the improvement of the supply of goods, services and food

products, the significant reduction of the sales of alcoholic beverages, and the increased activity in the development of the social sphere have had a positive effect on the standard of living of rural workers.

In the past 2 years the integration of the branches of the agroindustrial complex has been further developed in the form of such economic formations as agroindustrial combines. This experimental form of production organization originated in Krasnodar Kray and has now been given a "task" to many ASSR's, krais, and oblasts of the Russian Federation.

Agroindustrial combines are large multibranch formations. For example, the Kuban APK combines eight kolkhozes and seven sovkhoses, industrial enterprises for providing service and processing agricultural products, and transportation and trade organizations.

The experience of the first years of operation shows that agroindustrial combines are highly profitable formations that completely meet the demands of modern progressive technologies and advanced forms of labor organization. Their number has reached 35 in the RSFSR and it is continuing to grow.

The Novomoskovskoye Agroindustrial Association was created as an economic experiment for purposes of increasing the effectiveness of production on the basis of improvement of the economic mechanism and development of the creative activity and initiative of the workers of Tula oblast. It operates on cost accounting and self-support as a unified production and economic complex. Management of the association is carried out on a democratic basis. The person elected as chairman of the association's board is the chairman of the Kolkhoz imeni Lenin in Novomoskovskiy Rayon, Hero of Socialist Labor, Candidate of Agricultural Sciences Vasilii Aleksandrovich Starodubtsev.

The experience of such farms as the Nazarovskiy Sovkhoz in Krasnoyarsk Kray, the Kazminskiy Kolkhoz in Stavropol Kray, and many other enterprises convincingly shows the effectiveness of cost accounting and payment for labor from the gross income. Under modern conditions cost accounting in combination with efficient forms of labor organization and progressive technologies has become the main means of accelerated advancement of production and improvement of the well-being of the workers. Good examples of this are the agroindustrial committees of Moscow, Leningrad, Belgorod and Lipetsk oblasts which in 1986 completely eliminated all farms operating at a loss.

Individual unprofitable kolkhozes and sovkhoses have remained in the Karelian, Mary, Chuvash and Tuva autonomous republics and Kuybyshev, Kamchatka and Sakhalin oblasts. The agroindustrial committees of these territories have a real possibility of completing this year without farms operating at a loss.



At the same time in the work of farms, rayon associations and agroindustrial committees there is much that is negative, that impedes acceleration and holds back our overall progress—toward the goals determined by the five-year plan. Thus in spite of the large amount of financial assistance from the state, 17 percent of the kolkhozes and sovkhozes continue to operate at a loss and in certain oblasts their number has even increased. And the sum of the loss per one such farm has practically not decreased during the past 2 years. As compared to 1985, it has increased by 6 percent in Ivanova and Pensa oblasts, by 8 percent in Bryansk and Kursk oblasts, and by 9 percent in Pskov and Magadan oblasts. The proportion of farms operating at a loss is especially great in the Kalmyk ASSR, and Chita, Bryansk, and Amur oblasts.

Yet the procurement prices today make it possible for each kolkhoz and sovkhoz to operate with profit, regardless of its geographical position. Losses, as a rule, are the result of a lack of initiative and enterprisingness on the part of management workers and specialists, poor organization of labor and production, and a low level of labor and executive discipline. These are the only things that can explain the fact that on many farms labor expenditures per unit of output produced are not decreasing, the production cost of many kinds of products is high, the expenditure of feeds per head of cattle and per unit of output is increasing, and too much fuel and lubricants are being used.

Many farms, with the direct assistance of the RAPO, continue to withdraw circulating capital to use for capital investments and as a result certain kolkhozes and sovkhozes of Saratov, Tambov, Kalinin, Orel, Rostov, Kirov and Kursk oblasts and the Mordovian, North Ossetian and Udmurt autonomous oblasts are surviving only through credit from the Gosbank.

Certain economic managers have developed a dependent attitude toward the state during past five-year plans. They count more on help from the outside and not on the forces of their own collectives, they do not display initiative or boldness, they are slow, and frequently they are economically illiterate. It has reached a point where on a number of farms of Pskov, Bryansk, Yaroslavl, Volgograd, Rostov and several other oblasts current payments to pay off bank loans are close to the value of the gross output that is produced and in certain cases even exceed it. Because of the negligence of managers in 1986 losses from the payment of fines and penalties increased even on economically strong farms.

This state of affairs is intolerable. It is time for local management agencies to impose strict requirements on those who allow violations of financial discipline and place an effective barrier against the squandering of state funds and public wealth. Stricter demands must also be placed on supervisory agencies.

In implementing the decree of the CPSU Central Committee, "On Immediate Measures for Increasing Labor Activity in Agriculture on the Basis of the Introduction of Efficient Forms of It and Cost Accounting," management agencies of the APK are jointly working to introduce intrafarm accounting on the basis of the collective contract. During 1986 alone the number of contract subdivisions increased by 5,160 in crop growing and by 30,100 in animal husbandry. Their proportions amounted to 75.1 and 61.7 percent, respectively. And this is understandable for the collective contract is advantageous both to the state and to each worker.

On an average during 1985 and 1986 in crop growing contract subdivisions the productivity of grain crops was 19 percent higher, vegetables—21 percent, potatoes—27 percent, and sugar beets—63 percent higher, and labor productivity was 87 percent higher. In animal husbandry branches this last indicator was 56 percent higher, including in dairy farming—22 percent, hog raising—56 percent, poultry raising—57 percent, sheep raising—70 percent, and fattening of animals—99 percent.

Managers and specialists of all ranks must be deeply aware that cost accounting is not a goal, but a method of achieving a goal, it is a work method whose utilization results in increased effectiveness of labor activity.

Yet the inspections conducted by workers of the central staff of the RSFSR Gosagroprom showed that frequently in the local areas they distort the real picture of the mastery of work methods using principles of cost accounting and exaggerate figures on reports. These exaggerations and distortions of reporting have been noted in the activity of the agroindustrial complexes of the Chuvash ASSR, and Amur, Omsk, Pensa and several other oblasts.

None of us may forget the truth that was emphasized in the report of the chairman of the USSR Council of Ministers, N. I. Ryzhkov at the 7th Session of the USSR Supreme Soviet. "The most perfect economic mechanism in and of itself will provide neither income nor profit. All economic levers and stimuli create only favorable conditions for effective work." Therefore exaggerated report data and failure to observe the established principles distort the very essence of cost accounting.

Mastery of the principles of cost accounting presupposes a fairly high level of economic training of specialists and managers. An "elimination of cost accounting illiteracy" was conducted everywhere during the winter. In management agencies and on kolkhozes and sovkhozes a large number of workers were trained, which had a positive effect both on the rates of introduction of the progressive method of management and on the quality of work of cost accounting subdivisions and enterprises as a whole. Nonetheless short-term training in such a complicated matter is only the first step toward mastery of economic knowledge by the masses. The task consists in

knowing not only the "arithmetic," but also the "algebra" of management. Cost accounting can and should produce a return that is much greater than the one that is being achieved today in many contract brigades and units.

The cost accounting structure can be figuratively presented in the form of a circle of a chain consisting of such functional links as analysis of economic activity, planning and training of personnel for work under the conditions of the contract, staffing labor collectives, organization of production and economic activity, accounting, and payment and stimulation of the labor of the workers. And the final link is again the analysis of the activity.

A mandatory requirement when introducing cost accounting is systematic work in the observance of principles and the inadmissibility of the failure to observe any of them. Extremely important is the process of introduction whose basis is the substantiated decision of the administration to change structural subdivisions over to the new method of labor activity. A group of workers is created with the head economist in charge for conducting an in-depth analysis of the activity of all subdivisions so as to generalize the work experience and search out reserves for intensification of production both in each of them and in the business as a whole.

The introduction of intrabusiness cost accounting should be accompanied by such measures as refinement of the technologies and improvement of the management of production. The experience of the best farms of the republic shows that the greatest effect is achieved when, in addition to cost accounting, a shop structure of management is assimilated. Nor should one forget about such an effective force as socialist competition. Here it is expedient to develop unified evaluations of the activity of the subdivision which are used both when analyzing the cost accounting activity and when summing up the results of the competition.

Under modern conditions, when a changeover is being carried out to the new economic mechanism for the activity of the enterprises, which was approved by the June (1987) Plenum of the CPSU Central Committee, it has become an insistent need on a broad scale to change over to the contract form of labor organization in combination with cost accounting. Here an important role is assigned to specialists who in each case must determine the most expedient kind of contract, staff the subdivisions with workers of the necessary occupations, provide them with means of production, and render practical assistance in formulating contractual commitments between contracting subdivisions and the enterprise administration.

Experience shows that in crop growing the most promising are cost-accounting subdivisions which are assigned not individual crops but complete crop rotations. This makes it possible to utilize labor resources

and technical equipment more completely and to increase the fruitful soil and, consequently, productivity. A number of oblasts are organizing comprehensive contract collectives which are assigned both land and livestock.

The brigade of V. Ternovoy from the Kolkhoz imeni Lenin in Frolovskiy Rayon in Volgograd Oblast is operating effectively. A crop rotation with an area of 5,778 hectares has been assigned to the brigade, which includes 21 kolkhoz workers (including 17 machine operators). In 1986 they gathered 52,851 quintals of grain with a production cost of each quintal of 6.88 rubles (the average for the kolkhoz was 7.71 rubles and for the rayon—9.25 rubles). Each machine operator of this collective produced 45,000 rubles' worth of products during the year (the average for the kolkhoz was 32,000 and for the rayon—30,000 rubles).

On the Kochkovskoye Experimental Production Farm in Novosibirsk Oblast good results have been obtained by the team of D. Gyunter, which consists of five people who worked 1,328 hectares of agricultural land and fattened 500 head of cattle during the year.

The family contract, which is proving to be highly effective everywhere, is becoming more and more widespread. Within its framework the private interests of the workers are closely coordinated with the interests of the state and the system of accounting for and distributing earnings is simplified. For example, on the Vereyskiy Sovkhoz in Moscow Oblast the Soldatov family tends 50 cows. With an average milk yield on the farm of 2,680 kilograms, the family collective obtained 4,500.

On the Pobeda Kolkhoz in Altay Kray the Bauer couple, who tended 93 calves 4 months of age, achieved average daily weight gains of 730 grams and the production cost of a quintal was 163 rubles (on the average for the kolkhoz these indicators were 475 grams and 178 rubles). There are more examples like these.

But in spite of the obvious advantage of organizing family labor collectives, in a number of autonomous republics, krais, and oblasts they have not yet become widespread. This progressive form is being introduced at slow rates on the farms of Tyumen, Astrakhan, Kalinin, Kuybyshev, and Smolensk oblasts, and the Karelian and Kalmyuk ASSR's. Workers of agroindustrial committees and RAPO's do not help the managers and specialists very much. We know quite a few cases in which workers of the rayon or even the oblast staff when on the kolkhozes and sovkhozes do not exhibit sufficient competence in questions of organizing the contract, cost accounting, norm setting or payment for labor.

Typical shortcomings in the work of contract collectives are violations in determining the norms for the production of products and, as a result of this, unjustifiably increased or reduced collective rates and a low level of planning and accounting for direct expenditures.

Not enough assistance is being rendered to agricultural enterprises by scientific and educational institutions. Many of the experimental demonstration funds refrain from these duties and essentially are not performing the functions assigned to them.

The low labor productivity and the poor return from the production potential is inherent in industrial and construction collectives of the APK. On the whole for industrial enterprises cost accounting brigades join together only 28.7 percent of this personnel, and only in the meat and dairy branches is this indicator 40 percent.

There is not a single cost-accounting brigade at food enterprises of the Karelian, Dagestan, Checheno-Ingush or Yakut ASSR's or Chita Oblast nor are there any in the canning plants of Vologda, Orel, Gorkiy, or Yaroslav oblasts. On the whole in the APK of the RSFSR only 3.8 percent of the brigades at industrial enterprises have been changed over to the contract, and in the Kalmyk ASSR and Astrakhan, Ivanovo and Murmansk oblasts—not a single one.

The decree of the July (1987) Plenum of the CPSU Central Committee, "On Party Tasks for Radically Restructuring Management of the Economy," envisions a creation of the necessary conditions and space for the application of complete cost accounting, self-financing, and self-support. Questions related to the changeover of all farms and enterprises of the RSFSR Gosagroprom to self-support, as of 1 January 1986 are handled in Stavropol Krai and six rayons of Orel, Kuybyshev, Kurgan, Novosibirsk and Tomsk oblasts, and Altay Krai.

Within the system of the RSFSR Gosagroprom there is an active search for new ways for accelerating the implementation of the Food Program. All the reality of today's rural life confirms the thoughts of M. S. Gorbachev who in June 1987 at the Plenum of the CPSU Central Committee said: "The changes taking place in the society since the January Plenum show especially clearly that the country's healthy forces and the workers are firmly in favor of restructuring, acceleration, an immediate solution to crucial problems, and an unconditional surmounting of stagnation and conservatism."

At the present time it is necessary for all farms and enterprises, RAPO's, agroindustrial combines and agroindustrial committees to analyze the state of affairs attentively and in depth, to account for the mistakes that have been made, and to exert maximum efforts so as to greet the 70th anniversary of October with new labor achievements.

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## Forestry, Timber

**Gossnab Official Views Timber Supply Problems**  
18240009 Moscow *LESNAYA PROMYSHLENNOST* in  
Russian 15 Sep 87 p 1

[Article by V. Vorobev, deputy chief, USSR Gossnab Soyuzglavles [Main Administration for Timber Products Supply]: "State Orders and Forest Product Supplies"]

[Text] The current demand for timber is well known. It is a scarce material and we have still not succeeded in reducing the "hunger" for it. It would seem that the 394 million cubic meters of commercial timber logged in our country last year should have completely met the national economy's demand for lumber. However, this did not occur. The shortage became even worse. Soyuzglavles receives hundreds of complaints about shortages of forest products and requests from consumers about where to find them.

Attempting to solve the problem, planning organs are increasing logging plans. However, the logging industry cannot keep pace with the growth in plan targets and is starting to slide. As a result, customers do not get the items planned for them. This story is repeated year after year.

This year was also no exception. In the past 8 months customers received over 11 million cubic meters of commercial timber less than called for by the plan. A difficult situation is being created for the 1988 plan. The lack of balance between timber resources and consumption is even more acute. There are many reasons for this. We will examine only the basic ones.

As is known, in recent years loggers have not fulfilled logging plans. This is seen as the main reason for the shortage. However, let us look at the problem from another angle. Does all this timber, logged at such effort, reach the customer. No, far from all of it does. Official materials from inspections of felling areas show that felling losses last year totaled 4.6 million cubic meters, or 1.2 percent of all timber logged. Surveys conducted by the Soyuzgiproleskhoz [State Forestry Planning] Institute at USSR Gosleskhoz [State Forestry Committee] show that timber losses at cutting areas and along logging roads are even greater in the North, Northwest, Volga-Vyatsk, Urals, Central and other regions.

Because of the constant push for cubic meters of hauled timber, uneven work in preparing timber throughout the year and organizational and technical problems, commercial timber output declines considerably during the bucking stage. These losses total about 2 million cubic meters annually for the logging industry.

The existing procedure for allocating timber stocks to ministries and departments also harms the national economy. There are often no substantiated norms for customers' wood use. This causes lumber funds to be



increased. As a result, timber is used irrationally and it oftensimply squandered. Thus, according to data from Goslesoinpektsiya [State Forest Inspectorate] at Gosglavles, just at the 620 enterprises inspected in 1986 more than 800,000 cubic meters of various forest products were used in excess of norms, not used for their designated purpose or wasted because of improper and excessively long term storage.

There is another reason for losses — the systematic violation of specifications. Customers are not sent what they order, but what loggers have at the time. Understandably, it is not always possible to use such material for its designated purpose.

The comprehensive processing of timber remains an unsolved problem. The present technology for its logging, transport and processing is very imperfect. Every year more than 85 million cubic meters of economically useful wood wastes are accumulated in the country. However, only a little more than 70 percent is used. Large amounts of wood wastes, more accurately, secondary resources, are hauled around the country in the form of unspecified output, which is not used for its purpose and is often burned or deteriorates after being stored for years by customer. In the Minesbumprom system alone such losses exceed 4.3 million cubic meters of wood annually. It cannot be otherwise when enterprises from 56 ministries and departments in 14 union republics are engaged in logging and wood working.

One can also cite many other reasons. However, in pointing out the main one, it should also be said that most losses of this type are to a considerable extent linked to excessive centralization in the distribution of forest products and enterprises' insufficient economic interest in the rational use of timber.

Naturally, these problems cannot be solved in a single year. However, under the new operating conditions we cannot move forward only along the line of increasing timber delivery volumes. Therefore, substantial changes have been made in the compilation of the 1988 plan. The center of gravity has been shifted towards speeding up contracts between suppliers and customers. This work should be completed in September. This deadline is fully realistic, as USSR Gosplan reduced by more than five fold the number of centrally planned positions for forest materials. USSR Council of Ministers state orders include only the most important products. Ministries and departments plan only 23 types of forest products for state orders. Product specification, including tree

species and qualitative characteristics, will be made by enterprises themselves in when signing contracts for delivering such graded products.

During the present transition period it is important not only to retain but to expand economically advisable direct links between suppliers and customers. There should be concern about preventing violations or restrictions on the rights granted to suppliers and customers by the Law on State Enterprises.

A forest products list has been approved. These will be supplied by the producing enterprises themselves from direct unlimited orders. Contracts for the delivery of these products are signed without plan acts. This, we note, is an important factor. It is a real embodiment of the program for the considerable expansion of enterprises' rights and it increases their responsibility for results from their activities.

Logging enterprises must more rapidly determine the output of commercial grades, which will have priority in state orders, and the amount of wood remaining for their own consumption and processing. It should be kept in mind that production capacity for lumber sawing and wood working is only 70-80 percent utilized, especially in regions with no or only small forests. Capacity at joinery enterprises is 75-80 percent utilized and even less in regions with no or only small forests.

USSR Gossnab territorial organs are doing a lot of work. In the immediate future they must finish compiling regions' demand for forest products, determine capacity reserves for increasing wood working, especially for customers' orders to increase retail stocks.

In the immediate future there must be improvements in forest product distribution, considerable increases in their retail trade and there must be solutions to questions in planning product distribution and delivery, in resource conservation and price formation.

Solutions to all these questions by ministries and departments and USSR Gossnab will make it possible to assure, in accordance with the decisions of the June (1987) CPSU Central Committee Plenum, the organizational restructuring of material-technical supplies to the national economy. This is one of the most important conditions for accelerating the country's social-economic development.

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### Goods Production, Distribution

**Trade Turnover Figures From January-September 1987**  
18270013 Moscow SOVETSKAYA TORGOVLYA in  
Russian 15 Oct 87 p 1

[Report by the USSR Central Statistical Administration]

[Text] Fulfillment of Retail Trade Turnover Plan by  
Union Republics for January-September 1987

	1	2	3	4	5
USSR	252691	96.4	97.9	101.2	103.3
RSFSR	138055	95.4	97.5	100.8	103.1
Ukrainian SSR	42321	96.9	97.7	101.1	102.8
Belorussian SSR	9643	100.3	100.8	104.9	107.3
Uzbek SSR	10166	94.4	94.2	99.3	100.9
Kazakh SSR	11992	97.9	99.1	102.8	104.0
Georgian SSR	3938	91.5	95.4	100.9	101.7
Azerbaijani SSR	3510	96.4	97.4	103.4	104.2
Lithuanian SSR	3850	100.6	100.5	100.4	104.3
Moldavian SSR	3311	99.7	99.8	103.6	104.3
Latvian SSR	3287	99.9	99.8	101.1	104.7
Kirghiz SSR	2462	97.6	97.5	104.5	105.4
Tajik SSR	2323	96.6	97.6	102.4	103.1
Armenian SSR	2420	96.5	97.3	102.6	103.8
Turkmen SSR	2004	95.3	97.0	100.9	102.4
Estonian SSR	2070	100.8	101.4	101.5	103.7

1. Actual volume of retail trade turnover (in millions of rubles).

2. Percentage of plan fulfillment for total volume of trade turnover.

3. Percentage of plan fulfillment without sales of alcoholic beverages.

4. Total volume of trade turnover: January-September 1987 in percentages and January-September 1986 (in comparable prices).

5. Trade turnover without sales of alcoholic beverages: January-September 1987 in percentages and January-September 1986 (in comparable prices). /12913

**Republic Trade Turnover Figures From January-October 1987**  
18270017 Moscow SOVETSKAYA TORGOVLYA in  
Russian 12 Nov 87 p 1

[Report by the USSR Central Statistical Administration]

[Text]

### Fulfillment of Retail Trade Turnover Plan by Union Republics for January-October 1987

	1	2	3	4	5
USSR	282570	96.6	98.1	101.4	103.3
RSFSR	154379	95.6	97.7	101.0	103.2
Ukrainian SSR	47273	97.0	97.8	101.3	102.7
Belorussian SSR	10805	100.6	101.0	105.0	107.3
Uzbek SSR	11351	94.6	94.6	99.4	101.0
Kazakh SSR	13431	97.9	99.2	103.0	103.9
Georgian SSR	4400	91.9	95.3	101.1	101.7
Azerbaijani SSR	3916	96.3	97.4	103.5	104.4
Lithuanian SSR	4317	100.9	101.0	101.1	104.9
Moldavian SSR	3729	99.6	99.8	103.8	104.3
Latvian SSR	3669	99.95	99.93	101.4	104.9
Kirghiz SSR	27755	97.4	97.4	104.3	104.8
Tajik SSR	2585	96.1	97.2	102.0	102.7
Armenian SSR	2719	96.8	97.5	102.8	103.9
Turkmen SSR	2238	95.6	97.5	101.1	102.5
Estonian SSR	2313	100.8	101.5	101.7	104.0

1. Actual volume of retail trade turnover.

2. Percentage of plan fulfillment for total volume of trade turnover.

3. Percentage of plan fulfillment without alcoholic sales.

4. Total trade turnover volume: January-October 1987 in percentages to January-October 1986 (in comparable prices).

5. Trade turnover without alcoholic beverage sales.

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## Energy Complex Organization

### Electric Power Generation in CEMA Countries Studied

18220004a Moscow EKONOMICHESKOYE  
SOTRUDNICHESTVO STRAN-CHLENOV SEV in  
Russian No 8, 1987

[Article by Yuriy Savenko, candidate of economic sciences, member, CEMA Secretariat, under the "Integration is the Multiplication of Forces" rubric: "Electric Power Engineering: Basic Directions for Long-Term Growth: Problems of Developing Power Engineering"]

[Text] "The provision of power is a high-priority area of collaboration."

"The discovery and utilization of new power sources is a crucial factor in the intensive development of the economy."

### I

At the present stage of intensive development of CEMA member-nations' economies and the qualitative upgrading of the technical base of production by accelerating scientific and technical progress, one of the paramount intersectorial problems has to do with fuel and power production. The manner in which this problem is solved will in large part predetermine the potentialities, rates and directions of economic and social progress.

Unification of CEMA member-nations' efforts and expanded collaboration in fuel-energy complex sectors are tremendously important relative to meeting the national economy's fuel and energy needs. As noted at the CEMA Member-Nations' Highest-Level Economic Conference, "raw materials and fuel-energy problems can be solved by mobilizing all CEMA member-nations' in-house resources and increasing their mutual collaboration". Mention was made of the need for these countries to come to further agreement regarding their economic policy as well as to their provision of energy, and major tasks were formulated for this field of activity. It is primarily a matter of the advisability of changing the structure of power production and expanding collaboration in the primary development of nuclear power production, in the maximally effective and prudent utilization of fuel and energy, in putting all forms of power carriers more completely into economic circulation, including new non-traditional sources. The above countries have agreed to develop collaboration in production and reciprocal deliveries of fuel and energy.

The nature and intensity of the changes in the CEMA member-nations' power-generating economies depend on the concrete conditions and features of their national economies (and particularly on their structures, developmental rates and directions, the levels of their power-worker and electric power-worker ratios, the potentialities and economic aspects of their application of

individual types of power carriers). Here, electric power use, which is considerable regarding its rates and outstripping growth, constitutes an objective regularity. Electrification has a decisive effect on improving labor productivity, living conditions, and the activities of the population. It is also terrifically important to the infrastructure and makes it possible to use the existing potential of nuclear power, solid (particularly low heat-value) fuels and renewable natural power-generating resources more completely.

The potentialities for accelerating the implementation of a number of priority scientific and technical directions (including the electronization of the national economy, the devising and producing of new synthetic materials and the intensive development of biotechnology) are linked to the continued growth of electrification, the development and qualitative improvement of the power-producing economies of the countries which comprise the KP NTP [Integrated Program for Scientific and Technical Progress].

The multilateral economic and scientific-technical reciprocity of the CEMA member-nations is conducive to the successful development of their national economies. The technical and economic features of electric power production, and primarily its "systemic nature", its high relative requirements for capital and assets as well as the time needed to erect and put projects into operation, have a definite effect on its forms and methods. These specifically determine priority in the development of prospective long-term programs of sectorial collaboration as well as their timely scientific and technical support.

The CEMA Permanent Commission on Collaboration in the Field of Electric Power has prepared and conducted major research related to collaboration on the fundamental problems of this sector's long-term development. We refer specifically to the working up of the CEMA member-nations' General Plan for Long-Term Development of Unified Electric Power-Production Systems for the Period up to 1990 and the conclusion (in 1977) of a corresponding agreement based on this plan. This large-scale international plan determined the basic directions for agreeing on a strategy for collaboration among the European CEMA member-nations and the MNR [Mongolian People's Republic] to find a joint solution to the major problems associated with developing this sector.

To date, most of the agreements arrived at by the interested countries of the socialist community have been concluded or put into practice. For example, The Khmel'nitskaya and Yuzhnoukrainskaya AES's are being constructed jointly, the Khmel'nitskaya AES-Zheshuv (Polish People's Republic) 750 kV power transmission line has been finished and put into operation, the first leg of the Yuzhnoukrainskaya AES-Isakcha (Socialist Republic of Romania)-Dobrudzha (People's Republic of Bulgaria) has been put into operation (with construction

of the second leg under completion), and erection of the double-circuit Tsyntsaren (Socialist Republic of Romania)-Kozloduy (People's Republic of Bulgaria) 400 kV power transmission line and the Kraynik (Polish People's Republic)-Firradien (GDR) 400 kV power transmission line has been completed.

In 1984 the Concept for Long-Term Development of Electric Power Generation and Basic Methods for Its Implementation for the Period up to 2000 was developed within the framework of the unified electric power production systems of CEMA member-nations, with consideration given to improving its operational reliability, and to possible collaboration with Western European power-producing associations. Based on this Concept, the Commission finished preparation of a general plan and a general agreement in 1987, both of which dealt with the collaborative development of electric power production in CEMA member-nations for this period.

The primary function of the general plan is to determine the most efficient ways to meet the countries' demands for electric power, taking into account their obligations to supply electric power and capacity on the basis of corresponding agreements. Here, high technical and economic indexes must be secured, as must be the more complete and rational utilization of the national power-generating resources available in these countries.

Provision has been made for continued collaboration and the rendering of aid to the Socialist Republic of Vietnam, the Republic of Cuba and the Mongolian People's Republic in implementing measures aimed at accelerating the formation and improving the efficiency of their power-producing economies. This collaboration will come about in accordance with bilateral and multilateral agreements and will be developed by the Commission on the Program for Sectorial Collaboration of the European CEMA Member-Nations and the People's Republic of Vietnam, the Republic of Cuba and the Mongolian People's Republic for a long-term period of 10-15 years.

By the year 2000 the overall gross demand for electric power for the European CEMA member-nations (counting the USSR's Southern Unified Power System) should increase 1.8-fold compared to the 1980 level. As this occurs, the average annual increases for 1981-1990 should amount to 3 percent.

The following are among the most typical developmental trends in this sector in the CEMA member-nations for the next 10-15 years:

- intensive use of national natural power-producing resources (including water resources and low-calorie solid fuels) along with maximally increased efficiency and reduced fuel and energy losses during production, conversion, transmission and use of electric power and heat;
- substantial changes in the structure of the balances of

capacity and electric power in most CEMA member-nations, to be accomplished primarily by increasing the share of electric power generated by AES's. Growth of the relative share of maneuverable installations, primarily GES's [hydroelectric power stations], GAES's [hydroelectric pumped-storage power stations] and GTU's [gas-turbine installations] of the overall anticipated increase of generating capacities;

- accelerated development of district heating and combined production of electric power and heat, particularly through the use of nuclear energy;
- continued development of national electric power-generating systems. Improvements in the parallel operation of the Unified Power Systems of CEMA member-nations and improvements in the reliability and effectiveness of their operation.

Cooperation in the implementation of these trends is the primary objective of sectorial multilateral collaboration by the fraternal states.

## II

At present, most of the electric power in the socialist community of nations is generated at TES's [thermal electric, predominantly steam-turbine, power stations]. Their share in the overall production of electric power in 1985 amounted to: People's Republic of Bulgaria—62.9 percent; Hungarian People's Republic—74.9 percent; GDR—87.3 percent; Polish People's Republic—97.2 percent; Socialist Republic of Romania—83.6 percent; USSR—(Southern Unified Power System)—77.6 percent and the CSSR—80.2 percent. In the next 10-15 years, the proportionate share of electric power generated by TES's will diminish as a result of intensively putting more AES capacities into operation, and the share of electric power generated by TES's will amount to less than half of the overall output of electric power (82.6 percent in 1985) by the end of this period.

The quest to achieve more effective utilization of natural power producing resources in CEMA member nations has caused a reduction in the amount of liquid fuels and natural gas used at TES's while increasing the use of low-calorie solid fuels, primarily brown coals and lignites. The total explored reserves for these countries come to roughly 134 billion t (which includes 99.8 billion t in the USSR's eastern areas), whereas approximately 720 million t in net reserves were recovered in 1985.

The widespread use of TES's during the next 10-15 years will necessitate extensive exchanges of production-related and scientific and technical experience and the joint conducting of corresponding research, particularly with regard to improving the effectiveness of fuel utilization.

The Commission developed a combination of measures for using fuel rationally and prudently to generate electric power and heat at TES's. In so doing, the generation of these two in combination remains the primary means of economizing when producing low-grade heat.

For example, catalogs and technical requirements for the manufacture of basic equipment (boilers, turbines and generators) to replace outdated units have been prepared for use when reequipping and renovating obsolete TES's (including the use of condensing units to cover heat loads).

Preliminary requirements for new and improved series-produced equipment for these purposes up to 1990 have been determined. The implementation of appropriate measures, by 1990 for example, will effect a savings of roughly 4.6 million t of standard fuel per year at general-purpose electric power stations in the USSR.

The implementation of joint developments has improved the basic operational indices at TES's. Thus the fuel consumption rate per 1 generated kw/hour at general-purpose electric power stations was reduced, for example, during 1971-1985 by 12.7 percent in the Hungarian People's Republic, by 18 percent in the GDR, by 16.5 percent in the Polish People's Republic, by 11 percent in the USSR and by 11.3 percent in the CSSR.

Qualitative changes in thermal power engineering in CEMA member-nations in the next 10-15 years are primarily associated with the intensive introduction of more progressive, economic and reliable equipment, improved effectiveness in fuel use at TES's, with improved dependability and enhanced technical and economic indices for their operation when using full-scale automated control of primary and auxiliary equipment, with the continued development of district heating and power-and-heat generation and with the implementation of measures for the technical retooling and renovation of outdated TES's.

### III

Prospective changes in the power generation structure are primarily connected to the preferential development of nuclear power production. Collaboration among CEMA member-nations is one of five high-priority directions in the Integrated Program for Scientific and Technical Progress, one of whose primary tasks is the scientific and technical support of long-term programs to develop this sector in these countries.

The 42nd meeting of the CEMA Session (November 1986) approved the Program for the Construction of Nuclear Power Stations and Nuclear Thermal Electric Power Stations up to the Year 2000, which calls for increasing the total capacity of the nuclear power stations in CEMA member-nations (except for the USSR) to 50 million kW (the 1985 level was roughly 6.6 million

kW). Electric power generated at AES's in these countries will increase to roughly 30-40 percent of its overall production (roughly 9.0 percent in 1985). In the USSR, where this share stood at about 11 percent in 1985, plans call for it to be raised to approximately 30 percent, which will boost AES capacities 5-6-fold.

AES's are constructed in fraternal countries with the technical assistance of the USSR. In most cases, VVER-440 [water-cooled, water-moderated power reactors] and VVER-1000 reactors, which have shown themselves to be dependable, economical and safe installations. Graphite-moderated pressure-tube boiling reactors have also been developed in the USSR. These units have a unit output of 1,000 and 1,500 MW.

By the beginning of 1987 there were some 28 blocks equipped with VVER-440 reactors in operation in Bulgaria, Hungary, the GDR, the USSR and the CSSR, and construction of AES's equipped with this type of reactor had begun in the Republic of Cuba and in Poland. Blocks equipped with VVER-1000 reactors are operating in the USSR, and the first installations of this type are being built in Bulgaria. Preparations are underway to build them in some other CEMA member-nations as well.

Programs for the development of nuclear power are being implemented in these countries on the basis of the Agreement on Multilateral International Specialization and Cooperation in the Production and Reciprocal Deliveries of Nuclear Power Station Equipment During 1981-1990. A machine-building base is needed to carry out this program in the participating countries. The Agreement is designed to be augmented (to include AST's [nuclear heat supply plants] as well), and is to be extended to the year 2000.

The ensuring of the planned rates for developing nuclear power depend on corresponding joint scientific and technical developments. Agreements are presently being concluded which deal specifically with collaboration in scientific research and experimental design operations connected with developing power blocks equipped with VVER-1000 reactors, with further improving these reactors and with devising large-capacity breeder reactor installations (which use a sodium coolant, and dissociating gases as a heat exchanger).

The year 1985 witnessed the conclusion of the Agreement on Collaboration Among CEMA Member-Nations in Scientific and Technical and Planning Operations on ATET's [Atomic Heat and Electric Power Stations] and AST's for the Generation of Industrial Steam and to Meet Power-and-Heat Generating Needs for the Period from 1986 to 2000.

In addition to using ATET's and AST's as possible atomic heat supply sources, the next 10-15 years will see an examination of the idea of using AES's to produce limited quantities of heat for consumers. Developments are in progress on ASPT's [nuclear industrial heat supply



plant). Each of these plants possesses specific properties and in the future, CEMA member-nations will be able to install them in combinations best suited to their specific conditions.

An agreement on collaboration concerning improvements in the organization and performance of AES repairs was signed in 1986.

The development of nuclear power engineering in the CEMA member-nations is associated with: continued use of AES's with improved technical and economic efficiency and nuclear heat-supply sources for transporting heat over long distances; preparing and implementing measures for improving the efficiency of the nuclear fuel cycle (specifically by devising new progressive methods and means for processing, transporting and burying radioactive wastes); developing equipment for breeder reactors and multipurpose high-temperature nuclear power-producing installations and developing scientific bases for controlled thermonuclear synthesis.

The realization of these long-term directions and programs for putting capacities into operation require an expansion and deepening of multilateral interactions of these countries in producing needed equipment, in developing a combination of unified scientific and technical documentation, in the regular exchange of information needed to manufacture equipment, in erecting and operating installations and in organizing the education and training of the corresponding labor force. Joint forces are being used to prepare a number of collaborative measures complying with the program approved by MAGATE [International Atomic Energy Agency] for setting up an international routine for the safe development of nuclear power production.

#### IV

On the basis of the need to bring as many natural power-generating resources as possible into economic circulation and to develop operationally flexible structures for generating capacities in electric power generating systems, CEMA member-nations propose to increase the degree to which they use their **hydraulic power engineering potential** during the next 10-15 years.

The potential reserves of hydraulic power engineering resources of the European CEMA member-nations—according to present-day estimates—amount to about 204 billion kW/hours of possible annual delivery (the figure for the USSR includes the potential of the area served by the Southern Unified Power System), including the People's Republic of Bulgaria—13 percent, Hungarian People's Republic—3.7 percent, GDR—0.9 percent, Polish People's Republic—11.2 percent, Socialist Republic of Romania—34.2 percent, USSR—23 percent and 14 percent for the CSSR.

Those hydraulic power engineering resources which can technically be used have been estimated at 108 billion kW/hrs (comprising some 40-70 percent of the potential reserves of some countries). About 30 percent of the total technical potential was used in 1985.

Most countries plan to build a number of GES's [hydro-electric power stations] during the next 10-15 years (including in border-river areas), and to continue constructing GAES's. This will increase the degree to which hydraulic power engineering resources are used (by the year 2000, CEMA member-nations' unified power systems, including the USSR's Southern Unified Power System, plan to increase the average long-term delivery of electric power from GES's approximately 2-fold compared to 1985 levels). This will preserve one of the basic directions in hydraulic power engineering construction, i.e., the full-scale use of hydraulic power resources, taking into account the requirements and problems of developing other water consumers.

The concerned countries have completed or are working on joint comprehensive developments, which are of definite importance in planning the development of their hydraulic power engineering and water economy efforts.

Examination is now underway of questions dealing with optimizing design resolutions, developing progressive calculations and designs for hydraulic engineering structures, and with preparing specifications for developing new hydraulic power engineering equipment. Recommendations dealing with the optimization of operating schedules in particular have found practical application in the Batak and Sestrimo GES series in the People's Republic of Bulgaria and at the Markersbakh GAES in the GDR. Taking the joint research conducted by Romanian specialists into account, optimization of the centralized control of the GES series on the Bistritse, Ardzheshe and Olte rivers has been completed. This research was used to solve problems in the control systems of a number of GES's in the USSR (including the Krasnoyarskaya and Votkinskaya GES's), and in the CSSR.

The dimensions of economically justified hydraulic power engineering resources have been precisely defined, and the scope to which the potential of small rivers and water courses can feasibly be realized over the next 10-15 years has been evaluated.

Continued collaboration of the concerned CEMA member-nations in the field of hydraulic power engineering is primarily linked to making more efficient and comprehensive use of the potential of border rivers, with modernizing and expanding operating GES's, with developing modern methods of planning, building, operating and controlling GES's and GAES's as components of unified power systems and with implementing effective measures to combat silting in water reservoirs and transformism in river beds and other aftereffects of hydraulic power engineering construction.

A crucial is being played by the development and introduction of state-of-the-art equipment for GES's and GAES's and to setting up the manufacture of this equipment via specialization and joint effort. The Commission is presently uncovering opportunities for devising, on an integrated basis, standardized units of small-scale equipment for GES's and developing rational lay-out and design resolutions which will reduce the unit cost and quantity of materials used at these GES's, and industrializing their construction.

## V

The problems of developing parallel operation in their **unified electric power systems** are of crucial importance to the CEMA member-nations' multilateral collaboration.

During the 25 years which has elapsed following the formation of the TsDU [Central Dispatcher Administration] of the CEMA member-nations' unified electric power systems (1962), there has been an increase in the amount of electric power generated and consumed, inter-system electrical connections and reciprocal deliveries of electric power have undergone intensive development and the technical and economic indices for production and distribution of electric power have improved (particularly in view of the opportunity to use the existing potential of various types of power stations more rationally).

During 1962-1986 the amount of electric power generated at the electric power stations owned by TsDU-participating members increased 5.6-fold. Exchanges of electric power between their power systems grew 11.8-fold (amounting in 1963 to 2.4 percent, and in 1986—5.1 percent of the total power output).

The Commission has completed and is now conducting a number of investigations related to improving parallel operation of CEMA member-nations' unified electric power systems, operation of power engineering facilities and improving the reliability of the networks and the electric power systems. Specifically, these investigations include the development of a coordinated system for automatically regulating frequency and output and limiting power transfers along inter-system power transmission lines and within the countries' electric power systems. With this end in mind, it has been proposed that methods, algorithms and programs needed to regulate these parameters directly with third-generation computers and micro-processors be used. Information and control systems which will operate unified power systems in both normal and emergency modes are being devised. A complex of organizational and technical measures aimed at reducing losses within the electrical networks have been prepared. They include recommendations for the introduction of additional sources of reactive power.

The development of collaboration in the field of electric power systems will hereinafter be associated primarily with improved reliability in the parallel operation of the CEMA member-nations' unified electric power systems. To this end is devoted the joint research now underway into the problems of forming intra- and inter-system electrical links (which include the likely use of direct current inserts), improving the systems for automatically controlling the operation of the unified power systems and the automatic normal and anti-emergency equipment, developing models and design programs for optimizing the development of national power systems (taking into account the effect of their parallel operation) and devising methods for evaluating their reliability.

On the basis of the general plan and the general agreement, both of which determine the basic directions for collaboration in developing electric power engineering in the CEMA member-nations up to the year 2000, it has been suggested that the involved countries examine the degree of preparation of the feasibility studies of those specific power engineering facilities, primarily power network facilities, which enhance the reliability of parallel unified power system operation and which provide agreed-upon deliveries of electric power, taking increases into account, and that they find out which facilities can be used on this basis for bilateral and multilateral collaboration.

The implementation of the agreements dealing with solutions to fuel-energy problems, which were concluded at the Highest-Level Economic Conference of CEMA Member-Nations and the corresponding decrees of the Session and Executive CEMA Committee, is decisively important to the progressive development of the national economies of CEMA member-nations.

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**Geothermal Energy, Evaluation, Use**  
18220004b Moscow *EKONOMICHESKOYE*  
*SOTRUDNICHESTVO STAN-CHLENOV SEV in*  
*Russian No 8, 1987*

[Article by Viktor Dank, deputy minister, chairman, Hungarian People's Republic Central Geological Administration: "The Evaluation and Use of Geothermal Energy"]

[Text] The problem of using alternative sources of energy (solar, wind or geothermal etc.) has become exceptionally important since the time of the first worldwide oil crisis. Even though these types of energy only augment primary energy sources, taking them into

consideration and more precisely defining them in order to expand their applications play a major role in the supplying of electric power.

Geothermal energy is natural heat contained in rocks and their fluids. This heat is generated by the decay of radioactive elements found in the rocks. Heat is the "final element" formed by the radiation. The relatively poor heat conductivity of the earth's core raises the temperature in the interior zones.

The notion of geothermal energy has long been associated with impressive discharges of steam and water heated in excess of 150 degrees C. in active volcanic regions (such as Iceland, the Kamchatka Peninsula, Italy, and the Californian Geothermal Fields). In fact these very phenomena, which are caused by high temperature, can be used to produce electric power. However, when the CEMA member-nations, the USA and the states of the European Economic Community set about making wide-scale assessments of geothermal energy resources at the end of the 1970's, a great deal of importance was attributed to the lower-temperature geothermal systems which have been discovered in open spaces.

As the study of geothermal energy on a world scale has increased, an independent field of science—geothermy—has taken shape. The growth of this science in the last 10 years has in large part been fostered by the international conferences organized by CEMA and the United Nations. UNESCO has set up an independent working group as well as an international research institute (in Pisa, Italy) to investigate geothermal energy.

Research results have defined the major territorial zones where exploration of geothermal reservoirs is most promising. Of these, the "hot-dry" zones of rocks, in which even though the temperature is only a little higher than average and the rocks have insufficient pores and cracks, can be considered only merely potential reservoirs. In spite of the fact that experiments in artificially breaking up these rock zones are under way in a number of sites around the world for the purpose of subsequently extracting their thermal reserves by the fluid injection method, in practice the reservoirs with reserves of thermal water and steam in their natural state are crucially important.

Among the best-known geothermal areas in the socialist community of countries are the Kamchatka Peninsula in the USSR and Fabishebeshtyen, in the Hungarian People's Republic, as well as the thermal water fields and the areas adjacent to the steam fields in the Hungarian People's Republic (VNR), the CSSR, the Socialist Republic of Romania (SRR) and the USSR.

### Collaboration in the Field of Geothermal Energy

On the CEMA Committee's recommendation on Collaboration in Planned Activities, the 39th Meeting of the Permanent CEMA Commission on Collaboration in the Field of Geology (1980) adopted the plan of operations "The Detection of Geothermal Energy Resources for Use in the National Economies of CEMA Member-Nations". Hungary was approved as the country to organize these operations. The People's Republic of Bulgaria (NRB), the VNR, the Socialist Republic of Vietnam (SRV), the GDR, the SRR, the USSR, the CSSR and the Socialist Federal Republic of Yugoslavia (SFRYu) are participating in carrying them out. The feasibility study for the working program emphasizes the importance of making greater use of new and auxiliary types of energy. These include geothermal energy as presently the most promising from the standpoint of their practical application.

The operations were performed in three stages. The first was carried out in 1980-1981 when a study was made of geothermal conditions in the participating countries, with a subsequent summary and analysis of data on the technological extraction process, the use of geothermal energy and information dealing with these problems. It was found that thermal waters make up an extremely small share of the CEMA member-nations' power-production balance. This is related to the fact that a number of production-related problems associated with thermal water (corrosion, deposition of salts, environmental pollution) remain unresolved. Moreover, extracting this water by way of overflow is an extensive method.

The initial stage of the operation has produced results. The working group drew up a geothermal survey map of the participating countries' territories which, along with other features, showed isotherms to a depth of 1,000 m. This is extremely important from a geothermal point of view.

In the GDR, the average temperature of this water was 40 degrees C (40-50 degrees C in the north and 30-40 degrees C in the south), in the CSSR, it was 25-40 degrees C near the Czech Massif, and increases in Slovakia from 30 degrees C in the north to 65 degrees C in the south and in the VNR and the western SRR from 60 to 70 degrees C. In Romania, the temperature drops around the Carpathians to 20-25 degrees C, with an average temperature in Southern and northern Bulgaria of 40 degrees C, reaching its highest observed level in the territory of the Western Basin at 50-70 degrees C.

The number of thermal water wells, as well as the quantity of water taken from them (Table 1) attest dramatically to the scope of the geothermal energy which has been discovered.



Table 1: Number of Thermal Water Wells and Quantity of Water Extracted

Country	Thermal Water Wells, units	Water Extracted, l/min
Bulgaria	420	239,040 <sup>1</sup>
Hungary	601	515,700 <sup>2</sup>
GDR	15	900
Romania		
70	48,000	
USSR	98	110,940
CSSR	98	110940

<sup>1</sup>Together with sources

<sup>2</sup>Only for thermal water whose temperature exceeds 35 degrees C.

Most thermal water wells are very deep exploratory wells. They are drilled in accordance with present-day world examples. A great many of these wells are built to take water as it overflows. The working group feels that thermal water recovery levels and thermal energy production can be increased by using the reverse injection system to extract thermal water—a state-of-the-art method of heat production.

Quantitative data related to the use of geothermal energy at this stage of the operations are of a referential nature (Hungary—500 mW, Romania—47, USSR—136, CSSR—57 mW), since a number of different methods were used to compile them.

The task of developing a unified method for estimating geothermal resources was set at the second stage (1982-1984).

As a result, the working group drew up the Methodical Guide to Exploration, Surveying, Estimating and Mapping Hydrothermal Resources for CEMA Member-Nations and Yugoslavia (1984), which meets world standards.

In addition to analyzing the experience gained in studying and using hydrogeothermal resources in BulgariaB, Hungary, the GDR, Romania, the USSR, the CSSR and Yugoslavia, modern achievements in hydrogeology, geothermy, hydrodynamics as well as geological survey affairs and the economics of nature use, the guide also examines the most fundamental problems of surveying, assessing and mapping hydrogeothermal resources. In so doing, it places particular emphasis on intensive methods of developing these resources, taking into account environmental protection requirements and the coordinated use of natural heat carriers. Using the principles and methods for studying hydrogeothermal resources set forth in the Methodical Guide will make it possible to detect thermal water deposits, to set the most promising of them apart for immediate development and to enhance the trustworthiness of estimating the resources and developing the reserves in a scientifically valid manner.

The 48th session of the Permanent CEMA Commission on Collaboration in the Field of Geology (1984) approved the Methodical Guide and recommended its use by the participating nations. The session approved a plan of operations at the third and final stage, the goal of which was to use the Methodical Guide to draw up hydrogeothermal maps with an explanatory note relevant to the territories of the European CEMA member-nations and Yugoslavia. Particular emphasis was placed on the preparation of a series of maps of the thermal water resources of the Carpathian Basin on a scale of 1:200,000.

### Geothermal Energy Use in the Hungarian People's Republic (VNR)

The VNR ranks third in the world in geothermal energy production and average daily consumption. This shows that the country has a great deal of experience in the study of the circumstances hindering the optimal utilization of thermal water.

Two extensive thermal water systems have been isolated in the VNR. The first of them is a Pliocene multi-stage sandstone-psammitic complex which acts as a thermal water trap for more than 50 percent of the country's territory, and the second is a Mesozoic carbonaceous complex, part of which is located on the edges of karst mountainous systems and has a close hydraulic connection with the cold karst waters. The other part of the carbonaceous thermal water traps are covered by the basin's water-impermeable deposits, which designates it as a covered trap.

Hungary's peculiar geological situation can be explained by its extremely favorable geothermal conditions. The VNR's natural thermal springs have been used since ancient times primarily for balneological purposes, i.e., therapy via curative mineral baths. The first thermal water wells were drilled near the natural springs in the second half of the 19th century. A great many more such wells were drilled after 1945, particularly between 1966 and 1972. Drilling operations slowed down in subsequent years to roughly 10 wells per year.

There were 1,009 thermal water wells in 1984, with a maximum total yield of 884,602 l/min during the well-constructing period. Thermal water at a temperature higher than 50 degrees C can be obtained in 40 percent of the country's territory, and water hotter than 90 degrees C in 10 percent of its area.

Thermal water reserves from Pliocene basin deposits, recoverable by overflow, amount to 280,000 m<sup>3</sup>/day.

This quantity can be brought up to 1,100,000 m<sup>3</sup>/day with the help of the proper pump-assisted water-lift, and can be increased approximately 100-fold by reverse injection of water and heat reserves. However, this method of thermal water field development, outside of a few successful test wells in porous deposits, is still thought of as imperfect. The amount of heat withdrawn from karst and fractured thermal water traps and significantly increasing it via reverse injection have been found to be acceptable (Table 2):

Thermal Water Use In Hungary

	Wells, units	Yield during construction, 1000's l/min
Natatorial basins	262	256
Potable water	347	263
Agriculture	160	198
Municipal heating	9	16
Industry	64	59
Other	167	92

Within the VNR, there are some 1,719,000 m<sup>3</sup> of housing area are heated by thermal water, swimming and treatment facilities for more than 200,000 persons, 910,000 m<sup>2</sup> of greenhouses, 622,000 m<sup>2</sup> of greenery hotbeds and 773,000 m<sup>2</sup> of subsoil layers. Low-temperature thermal waters are used for drinking, particularly where sufficient quantities of potable water are unobtainable.

In certain areas, dropoffs in water pressure caused by concentrated thermal water extraction have been so great (2-6 bars), that a changeover to extracting water via submersible pump was unavoidable. However, no solution has been found for this problem when dealing with water at temperatures higher than 80 degrees C. Extraction of thermal water and geothermal energy by simultaneously using submersible pumps and reverse injection hints at the initiation of intensive development. In connection with this, those problems requiring urgent solutions loom distinctly larger, among which are:

- thermal water exploration, despite the great extent to which the country has been hydrogeothermally surveyed, always carries a certain risk which, in the absence of centralized subsidies, is taken by the purchaser;
- frequently the observable gas content, corrosiveness and inclination of thermal waters to contain salt deposits make it necessary to treat the water, thus increasing capital investment outlays;
- there are presently too many administrations and institutions (water management, mining, power engineering, agriculture, health care, environmental protection, long-term territorial planning) interested in thermal water exploration, recovery and use. The absence of proper cooperation among these entities considerably hinders further development of rational management in this field, as well as the production and utilization of thermal energy at the present level.

The following problems need to be solved in the near future in order to achieve the proposed objectives:

- the bases for unified management of thermal water sources and geothermal energy must be developed by mapping thermal water geothermal and geological conditions (on a scale of 1:200,000)
- additional exploration must be carried out in those areas where the risk associated with thermal water prospecting is high;
- in the future, thermal waters and their applications must be provided and ensured through coordinated efforts, this to be done in large part based on existing conclusions and plans for their use, and according to anticipated operating conditions;
- continued surveys must be made of water extraction via submersible pumps, the reverse injection method and the relative elimination of used thermal waters without causing environmental harm;
- to place particular emphasis on the use of thermal water in health care applications as well as for curative and tourist-related purposes.

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**Non-Traditional Sources of Energy Examined**  
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*Russian No 8, 1987*

[Article by Zdenek Kofranek, of the CEMA Secretariat: "Non-Traditional Energy Sources"]

At the present time, the economical and rational use of material resources is becoming increasingly important in solving fuel-energy and raw materials problems and is one

of the primary factors in changing the economies of the socialist community of countries over to an intensive course of development. Here, a great deal of importance is attributed to developing new energy sources and methods of converting it, which will reduce organic fuel consumption to a definite degree.

Effective methods of making industrial use of non-traditional renewable energy sources such as solar, wind and geothermal energy have been under development on a multilateral basis for 10 years. This interaction is being carried out within the framework of the CEMA Committee on Scientific and Technical Collaboration. In 1976, representatives of the NRB [People's Republic of Bulgaria], the VNR [Hungarian People's Republic], the GDR [German Democratic Republic], the MNR [Mongolian People's Republic], the PNR [Polish People's Republic], the SRR [Socialist Republic of Romania], the USSR and the CSSR [Czechoslovak Socialist Republic] signed the Agreement on Scientific and Technical Collaboration, which deals with "The Development of New Effective Methods of Converting Solar, Chemical, Wind and Geothermal Energy into Thermal, Electrical and Mechanical Energy, and Using These Methods to Devise Economical Devices and Installations". The Republic of Cuba was made part of the Agreement in 1978. The objective of the Agreement is to increase the extent to which the national economies of CEMA member-nations use energy from renewable resources, and the establishment of an industrial base which will enable new forms of energy to be made part of the energy balances of the participating countries.

The concerned parties have set up a Council of Representatives to settle the fundamental problems associated with meeting the terms of the Agreement. The Armenian SSR's Solar Laboratory and Moscow's All-Union Scientific Research, Planning and Design and Technological Institute of Power Sources are coordinating the development and implementation of the planned program. In addition, more than 80 organizations from fraternal countries are collaborating on this problem. While relying on the scientific and industrial potential of the participating countries, they must also devise and introduce into the national economy, by 1990, devices and installations which use renewable energy resources. Those who will be immediately involved in doing this are the national academies of sciences and a variety of sectorial scientific research and planning and design institutes.

The scientific research organizations are collaborating on a coordinated basis as a cooperative. Some of the joint work is carried out by contracts. The results are introduced independently by the concerned parties, or else provision is made for setting up production on a specialization and joint work basis.

The primary problem of working together in this field has to do with bringing their developments up to an up-to-date scientific and technical level, reducing the

amount of time spent in research, equalizing the scientific and technical potential of the countries participating in the Agreement, making rational use of CEMA member-nations' material and financial resources, establishing a bank of information materials and, finally, deriving an economic effect through the introduction of the results of this collaboration.

The program includes the development of:

- devices for converting solar energy into electrical and thermal energy;
- highly-effective chemical power sources;
- natural geothermal water and dry-rock heating systems and equipment and methods for protecting them from corrosion and salt deposits;
- thermoelectric generators;
- devices for converting wind power into electrical energy.

In accordance with this program, which has been incorporated into the Long-Term Goal-Oriented Program for Collaboration Among CEMA Member-Nations for the Economizing and Rational Use of Material Resources for the Period Up To 2000, work is under way on 22 subjects and 59 assignments. The agreed-upon five-year plan programs are by and large reflected as well in the fraternal countries' corresponding national programs and national economic plans.

The 10th Anniversary Meeting of the Council of Representatives, held in 1986 in Ashkhabad, capital of the TuSSR, to deal with the problem of "The Development of New Effective Methods for Converting Solar, Chemical, Wind and Geothermal Energy into Electrical, Thermal, and Mechanical Energy and Using These Methods to Develop Economical Devices and Installations" made it possible to intensify collaboration in this important field of endeavor. At the same time, CEMA member-nations held an international conference and the first international exhibit on the topic of "Utilization of New and Renewable Energy Sources". Over 150 specialists from fraternal countries took part in the conference. Roughly 100 reports were made on various aspects of this problem.

In the course of a decade the countries of the socialist community have conducted a great deal of initial scientific research dealing with the development and introduction of new and renewable energy sources. Definite advances have been made in a number of fields. Thus the NRB, the GDR and particularly the USSR, have improved their methods for manufacturing lead-acid-cell starter and traction batteries, thereby reducing lead consumption by 20 percent and the labor intensiveness of assembling them by 30 percent and has brought their specifications up to the level of the best world models. Nickel-cadmium batteries, developed jointly with the VNR, the GDR, the PNR and the CSSR, are being industrially produced in the USSR.



Among the new electrochemical systems being developed by specialists from CEMA member-nations are electrochemical generators (USSR) and power sources with fused, solid and water-free electrolytes (NRB and USSR). More research is being done on lithium power sources and other electrochemical systems. Mass production of these power sources will save great quantities of scarce materials and raw materials. For example, up-to-date manufacturing methods have been initiated in the manufacture of primary manganese-zinc power sources with alkaline electrolytes (USSR), primary elements for silver oxide-zinc system (PNR) and improved lead traction and starter batteries (GDR, PNR, USSR) etc.

The cost of the photoelectric devices used to convert solar energy has successfully been reduced. The joint efforts of the NRB, the VNR, the SRR, the USSR and the CSSR have reduced the cost of solar-power elements by a factor of 5, and the cost of the electric power they produce by a factor of 2-3, thanks to increased efficiency and improved manufacturing methods. The photoelectric power sources available in CEMA member-nations, which are used on low-power equipment, put out up to 500 V and have a 12 percent efficiency rating.

The level at which solar batteries and stations are manufactured has now made it possible to expand their mass production. The modifications on solar collectors developed in the NRB, the VNR, the SRR, the USSR and the CSSR meet all specified requirements. Many designs have found practical applications as experimental installations in the national economies of the countries participating in the Agreement. However, large-scale production will be commercially justified only after these items are standardized, when the cost and unit metal content of solar collectors have been reduced and after they begin to be manufactured on automated production lines.

For a number of countries, one promising direction for saving fuel-energy resources is through the use of thermocompressors. The integrated heating systems developed in the GDR, the SRR and the CSSR, which use these units, are already being used to supply heat to housing and public buildings. The output of those units now in operation is over 70,000 kW.

The NRB, the VNR, the SRR and the CSSR are placing particular emphasis on scientific research and experimental design work in the area of thermoelectricity. The NRB and the SRR are particularly interested in devising new semiconductor materials which will improve the efficiency of thermoelectric power sources in the future. The VNR and the USSR are focussing their efforts on thermoelectric generators as power sources for a variety of electrical equipment. These thermogenerators generate several tens of watts of output and are more economical than chemical power sources. Experience confirms the advisability of using them in various sectors of the national economy. There now remains the question of setting up their series production.

Subterranean thermal sources represent huge potential opportunities. Geothermal energy is used by CEMA member-nations mostly for heating and hot water supply. The VNR, USSR and CSSR have made practical advances in this field. The NRB, GDR and PNR are also developing their geothermal resources. Overall, there are now more than 800 wells in operation, with a total annual yield of over 300 million m<sup>3</sup> of hot water, which would require some 1.8 million t of standard fuel to heat.

The setting up of underground circulation systems in the VNR, the SRR and the USSR is worthy of attention. These systems are extremely promising, since they allow powerful and economical geothermal heat and power engineering systems to be built to supply heat to industrial facilities.

The countries participating in the Agreement have over 2,000 experimental wind-power installations in operation, ranging in output from 0.1 to 100 kW. These units generate an average of 20 million kW/hrs of electric power per year. The NRB, GDR, PNR, SRR, USSR and CSSR are close to devising 2nd-generation low-power wind generators designed to operate for up to 20 years.

Despite these advances, however, the introduction of new power-producing sources is associated with major difficulties. For example, these results have been used only partially and only in one country, even though more countries are interested in them. Consideration is being given to the possibility of specialized and cooperative manufacture with no agreement with national planning organizations and/or departments of the power-engineering or machine-building industries of the concerned countries.

In order to keep prospective equipment and production methods from lagging behind the level attained in the industrially-developed capitalist countries and at the same time to introduce the most recent scientific achievements at the fastest possible rates, scientific and technical collaboration must be combined with economic collaboration. To this end, products lists of those products and installations which have been devised and developed and which pertain to the problem have been passed on to the appropriate CEMA organs for the purpose of investigating the possibility of their being produced industrially.

Interelektro, an international organization promoting economic and scientific and technical collaboration in the field of electrotechnical industry, within whose framework a working group involved with solar and chemical power sources has been set up, is also interested in introducing scientific advances related to long-term power engineering into CEMA member-nations' national economies. A subject field of collaboration has been determined for the period up to 1990 as well as for the more distant future.

Increasing the extent to which new and renewable energy sources find use in CEMA member-nations' national economies requires that the experimental and production base be expanded for the purpose of developing conversion devices and installations and accordingly to bring in production organizations to implement the collaboration program. In this connection, optimal conditions must be created for working on a contractual basis, and closer ties must be established with the national foreign trade organizations.

Until now, the energy generated by non-traditional sources has been considerably cheaper than traditional forms of energy, and in order for it to be used on a widespread basis, a number of complex scientific and technical problems will have to be solved. This is why the work done by organizations from countries participating in the Agreement will be aimed first of all at further reducing the cost of ceramic semiconductors, improving the efficiency of solar converters and at developing new and advanced methods for their manufacture.

It is now time to set about devising solar photoelectric stations and systems capable of generating 10-50 kW, solar combination stations for producing heat and electric power and having a total output greater than 500 kW, to accelerate construction of geothermal thermal-electric stations capable of generating up to 300 kW, and wind generators and wind-power systems with power-output capacities of from 2 to 100 kW etc.

As experience has shown, the most promising and effective form of collaboration in all fields is that of setting up temporary working groups of experts, and jointly-operated laboratories. This allows solutions to be found for a great many problems related to developing new power sources.

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**Energy Developments in Far East Examined**  
*18220008a Moscow EKONOMICHESKAYA GAZETA*  
*in Russian No 41, Oct 87 p 7*

[Article by Yu. Kirillov, USSR Minister of Power and Electrification: "Problems and Prospects"]

[Text] In the future plans for the country's socio-economic development, as defined during the 27th CPSU Congress, the Far East occupies a special place. Based upon the country's economic interests, this region must become a highly developed national economic complex. The Far East of tomorrow and the intensive development of its industry, agriculture and social sphere require that the output of electric power be increased by a factor of roughly 1.5 over the next few years.

During a trip to Vladivostok in July of last year, M. S. Gorbachev included among the more important tasks the work of overcoming, as rapidly as possible, the chronic lag that has developed in the Far East fuel and energy complex. We have been assigned a complicated task. In outlining the path to be followed for solving it, we concentrated attention on the main reasons for the lag that has developed in the region's fuel and energy base. There are many reasons and they are by no means simple ones. On the one hand, there has been insufficient capital investments and, on the other, proper attention has not been given to developing its own construction industry (and as a result — slow rates for the placing in operation of new capabilities and the modernization of existing electric power stations). The tasks for placing power engineering capabilities in operation in 1984 and 1985 were carried out by only 50 percent. Moreover, the majority of them were introduced into operations towards the end of the five-year plan.

Nevertheless, the work carried out was not in vain. This was borne out by the past winter. Despite severe cold weather, the kray's enterprises were adequately supplied with electric power. In addition, there were no serious disruptions in the heating supply system.

Electric power consumption increased compared to last year and it also increased compared to the average indicators for the 11th Five-Year Plan.

The fact of the matter is that up until recently the development of power engineering in the region was oriented almost exclusively towards thermal electric power stations (for example, during the years of the past five-year plan the capabilities of thermal electric power stations in the southern part of the region increased by 43 percent). However, on the whole the region's natural characteristics were taken into account to only a weak degree.

What was the result of all this? Owing to the exhaustion of a number of coal deposits and a lowering of the quality of the coal being used at electric power stations, it became necessary to burn a considerable amount of mazut. Its consumption practically doubled during the past five-year plan. Meanwhile the cost for a ton of mazut in the southern regions of the Far East, with transport expenditures included, is higher by a factor of 2-2.5 than local brown coals (in comparable values).

Actually, mazut is being brought here from Siberia similar to other petroleum products, petroleum and power engineering coal (1 million tons annually).

The transport expenses for importing fuel exceed 300 million rubles annually. The expenditures for 1 ton of standard fuel consumed are higher by a factor of 1.5 than the average for the country. It is sufficient to cite just one example: the use of costly imported fuel alone resulted in

"Khabarovskenergo" sustaining losses of approximately 24 million rubles in 1986. If urgent measures are not undertaken, such losses could increase to 48-50 million by 1990.

And yet the Far East has its own materials — petroleum, gas, hydraulic engineering resources and particularly coal, the supplies of which constitute 34 percent of the country's potential supplies of coal. Present plans for development of the engineering base for the Far East are aimed at achieving more complete utilization of local resources.

### **The Future Belongs To Hydroelectric Power Plants**

Today we are assigning a priority to our hydraulic engineering resources and to the accelerated development of the region's hydroelectric power engineering operations. However, there is still only one large-scale GES [hydroelectric power plant] — Zeyskaya. Using local water power resources, it is possible to satisfy to a considerable degree the increasing requirements of the eastern regions for electric power, naturally with sufficiently high rates of development being assumed.

The construction of GES's will aid in the creation of a reliable and effective power engineering base for developing the natural resources of the Far East. The territorial isolation of some regions, the complicated natural and transport conditions and the limited nature of labor resources — all of these factors, in many instances, tend to make hydroelectric power plants indispensable sources for power supply.

The creation of hydraulic power systems has still one other important national economic aspect: they protect vast land areas against constant flooding.

Hydroelectric power engineering must undergo leading development in the far eastern region — such is the main point of view of USSR Minenergo [Ministry of Power and Electrification].

The Bureya Hydroelectric Power Plant with a capability of 2,000 megawatts (its output — 7 billion kilowatt-hours), the largest in the region, is presently under construction. This plan will protect approximately 15,000 hectares of land against flooding and ensure the development of stable agriculture on land which is constantly subject to flooding conditions. The reduction in losses caused by flooding conditions is estimated to be on the order of tens of millions of rubles annually.

During the 12th Five-Year Plan, capabilities must be placed in operation at the Vilyuysk GES-3 in the Western Yakutsk mining region. The completion of work on the Kolyma GES will make it possible to satisfy the

increasing power requirements of the gold mining industry in Magadan Oblast. Over the next few years, construction will commence on a cascade of new hydroelectric power plants along the Amur River. In the Trans-Baykal region, along the Vitim River, the plans call for the building of the Mokskaya GES for supplying power for BAM [Baykal-Amur Trunkline]. Hydraulic engineering operations in the Chukotka region will be developed at accelerated rates.

According to our computations, by the year 2000 one third of the kray's overall power engineering capability will be concentrated at GES's. Twenty percent of all of the electric power will be produced here.

Certainly, this is not meant to imply that the development of thermal electric power stations in the Far East will cease. To the contrary, additional capabilities will be introduced into operations at the Komsomolsk TETs-3 [Heat and Electric Power Plant No. 3], Primorsk and Neryungri GRES [state regional electric power plant] and the Khabarovsk TETs-3.

Here we have in mind the creation of an optimum structure for power engineering capabilities and an intelligent combination of thermal and hydraulic electrical power stations. However, there is a shortage of the fuel, particularly power engineering coal, required for thermal and electric power stations in the region. And what caused this deficit to come about? Only the fact that the mining of it is lagging behind the power engineering requirements. We are vitally interested in the accelerated development of the Yerkovteskiy, Urgalskiy, Luchegorskiy and Kharanorskiy open pit coal mines and the Urgal-1 mine. But USSR Minugleprom [Ministry of the Coal Industry] is by no means guaranteeing the quick elimination of this deficit. And indeed we have in mind the stable and reliable operation of electric power stations and, it follows, the rates of development for the entire economy of the Far East.

A vital need exists during this present five-year plan for ensuring the introduction into operations of capabilities for the mining of 14 million tons of coal. It is our fervent hope that USSR Minugleprom and USSR Minvostokstroy [Ministry of Construction in the Far East and Transbaykal Regions] will be able to accelerate the construction of promising open pit coal mines, including the first phase of the Solntsevskiy Open Pit Mine, the Tikhmenevskaya Mine and the Yerkovtskiy Open Pit Mine in Amur Oblast.

It bears mentioning that far eastern coal requires enrichment and certainly it is far cheaper to carry out such enrichment at the mining locations and not have to ship the coal by rail over large areas with the cars half filled with dust or dirt. However, the coal workers are still enriching only small volumes and this is resulting in tremendous losses for the entire economy.



Forecasts issued by geologists reveal that it is possible to reduce noticeably the importing of petroleum and petroleum products. The Srednebotuobinskoye petroleum deposit in the Yakut ASSR appears to hold great promise for the future. The development of this deposit (similar to the construction of the Lensk Petroleum Refining Plant) will make it possible to reduce the shortage of petroleum products. This question was raised long ago and yet no specific schedules have been defined for resolving it.

The development of the gas and petroleum bearing deposits of the Sakhalin shelf will make it possible to eliminate the fuel shortage in Khabarovsk Krai and Sakhalin Oblast. It is felt that this work should not be postponed.

Distinct from other regions of the country, the Far East is rich in renewable sources of energy — geothermal and energy of the wind and ocean. Until now, almost no use has been made of them. This situation will be changed noticeably during the 12th and subsequent five-year plans.

In particular, plans call for the construction of the Mutnovskaya Geothermal Electric Power Station on Kamchatka. Unfortunately, this construction is being held up by the RSFSR Ministry of Geology, which is late in supplying information on the steam and hydrothermal reserves. As a result, we are unable to commence the specific planning required for the electric power station and for its turbine equipment.

The all-round development of power engineering and the totality of electric power plants capable of operating on the basis of various types of energy resources — coal, gas, water — will serve to ensure their operations independent of external factors.

### Not Only Construction Complexities

However, the introduction of new capabilities into operations is only one half of the problem. A need also exists for ensuring the timely development of the power supply network economy. Thus the construction of electric power transmission lines will be continued at accelerated rates during the 12th Five-Year Plan.

Encompassing a vast territory of the Far East and the Far North, a majority of the region's energy systems operate on an isolated basis. Only the Primorskiy and Khabarovsk krais, Amur Oblast and the southern region of Yakutiya are connected by electric power transmission lines and have a common operational regime (this is the United Energy System of the East). It must be connected up to the United Energy System of Siberia and this calls for the accelerated development of 500 kilovolt electric power transmission lines.

Recently the Siberian and Far East branches of the Energoproekt Institute defined more precisely the best methods for developing them. The construction priorities for the period up to the year 2000 and the schedules for connecting up the Chita Energy System and the central and western energy regions of the Yakutsk Energy System to the United Energy System of the East have been defined. During the next five-year plan, a need will exist for creating a developed network of high voltage electric power transmission lines — including the newly erected Bureya GES, Kharanorsk GRES and the expanded Primorsk and Neryungri GRES's. At the same time, the reliability of the power supply network for the far eastern krai will be raised considerably.

At the present time, 4,600 kilometers of high voltage electric power transmission lines with a voltage of 220-500 kilovolts have already been built for the purpose of uniting the intra-regional power systems. This has made it possible to direct the principal flows of electric power to those areas having a special requirement for it — to metallurgical and machine building enterprises in Khabarovsk and the southern portion of Primorskiy krais, to the agricultural regions of the central zone of Amur Oblast to the Transsib and to BAM [Baykal-Amur Trunkline].

What can be done in the interest of accelerating the construction of power engineering installations? A considerable amount of work remains to be carried out. The construction capabilities of USSR Minenergo itself must be developed. The plans call for the capabilities for producing construction industry products to be increased by more than twofold and for the production of progressive structures and materials to be mastered prior to the year 2000.

The plans also call for a substantial expansion in and creation of new regional bases with their own construction industry enterprises within the construction-installation organizations. Plants for the production of reinforced concrete products and non-metallic products will be built or modernized radically in Primorskiy and Khabarovsk krais, Magadan Oblast and in other areas.

One large problem is the quality of the equipment being received for equipping the electric power plants. Quite often this equipment is subjected to fair criticism. This question is a particularly vital one in view of the fact that many existing plants are in need of reequipping at the present time.

It has not been a simple matter, for example, to ensure that the leading models of boiler units obtained from the Taganrog Krasnyy Kotelschik Association conform to the planned parameters for the Neryungri GRES. Workers at the Primorskiy GRES required 5 years, during the developmental period, in order to eliminate the defects in equipment produced by Sibenergomash at Barnaul.

And this list could be continued. We sent telegrams to the power engineering machine builders and we levied fines and still the region's economy sustained losses.

The new electric power plants must be supplied with skilled specialists. However, there is a shortage of them today. First of all, the number of power engineers undergoing training at educational institutes in the Far East is inadequate. It is our opinion that a power engineering faculty should be opened up at the Khabarovsk Polytechnical Institute and that the network of professional technical institutes and technical schools for the region as a whole be expanded.

The other side of the coin is the lack of housing for the workers and the underdeveloped nature of the social-domestic sphere. Life dictates that the construction of a new installation commences with the creation of a housing settlement which includes a school, children's institutes and a polyclinic. In actual practice, this cannot be carried out for the simple reason that the distribution of capital investments by items of expenditures is strictly limited — for installations of a productive and non-productive nature. It is believed that this is an artificial division and that it would be more correct to allow the ministry to use resources for those purposes which are considered to be of a priority nature at the time.

The creation in the Far East of a reliable industry for power engineering construction and an acceleration in the creation of electric power plants — these are actions which will ensure the successful development of the region's entire economy.

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**USSR Power Minister on Winter Preparations**  
18220009 Moscow SOVETSKAYA ROSSIYA in  
Russian 29 Sep 87 p 1

[Interview with Anatoliy Ivanovich Mayorets, USSR minister of power and electrification, by Yu. Burov: "Winter Allows No Delay"; date and place not given]

[Text] The decree of the CPSU Central Committee entitled "On Progress in Preparation of the Economy for Operation Under Winter Conditions" paid serious attention to timely and quality repairs of equipment of electric power stations, power networks, and heating systems and performance of other urgent operations to guarantee uninterrupted supply of energy resources to industry and the housing and municipal-service sector. How does the USSR Ministry of Power and Electrification intend to correct the deficiencies that have been noted and prepare the heat and power industry for reliable operation in the wintertime? Minister A. I. Mayorets has responded to the editors' request to tell about this:

[Answer] It has to be admitted that harsh criticism was quite justifiably addressed to the ministry in the decree of the Central Committee. The personnel in the heat and

power industry were at fault for a sizable number of interruptions in the operation of enterprises and transportation and in the supply of heat to residential areas last winter. The heat and power interruptions cost the country's economy dearly. Repetitions of the situation must not be allowed at any cost. What steps are being taken in that direction?

First of all, of course, the facilities already in place need to be set to rights. We hope to complete the repair of equipment by 1 November. Repairs are to be done at stations with an aggregate capacity of 83 million kw. The schedule for 8 months seems on the whole to have been met. But I still see no occasion for relaxation and complacency: the picture concerning repairs is very spotty. For example, in spite of assistance in the form of material-and-technical, financial, and labor resources, repair operations are being performed at a low level of quality and with a lag behind schedule at the enterprises of the Kuybyshev power system. Unjustified slowness has also been displayed by the managers of the Tula, Smolensk, and a number of other power systems. It is well known that we absolutely cannot be satisfied with such an attitude toward one's duties. And then the people of Kostroma, Sverdlovsk, and Tyumen have been working like diligent stewards, without breakdowns. That is because they have a well-organized department for diagnosis and preparation. When a particular generating unit is shut down for preventive maintenance, they already know how much work is to be done and they prepare everything that will be needed in good time. In short, they avoid "the unexpected," and they thereby save valuable time. The collectives of the Ivanovo and Penza power systems and the Lipetskaya and Saranskaya GRES's, where they have learned to operate without breakdowns and even without temporary shutoffs, have also distinguished themselves by their businesslike and responsible posture and their understanding of the importance of the area entrusted to them. At those enterprises they have organized the retraining of personnel, they are constantly raising their professional level, and the effort to raise horizons (vospitaniye) has been well-thought-out. It is that kind of atmosphere that has to be created in all collectives. Without exemplary technological and work discipline success is simply impossible. But unfortunately we also have too many cases of a different kind, where mighty sources of heat and power have been out of service for a lengthy period of time because of the irresponsibility of the attending personnel, because of negligence, and indeed because of outright slipshoddiness. Breakdowns have occurred through the fault of personnel at the Ulyanovskaya, Kotovskaya, and Syzranskaya TET's, fires and flareups have occurred at enterprises of the Kuybyshev and Gorkiy power systems. Consumer power cutoffs have been recorded in Saratov, Tambov, and Orel Oblasts and in the Chuvash and Mordovian ASSR's. And it is shameful that an elementary lack of foresight should have made such events possible. For example, in Kalinin Oblast, where the power supply was disrupted when old trees fell down—couldn't they have been sawed up in good time!

But there are no causes to justify interruptions: after all, every one of them means that industrial enterprises and transportation come to a halt and there is discomfort in residential areas.

We need to speak in particular about the condition of the heat supply. The lessons of last year have forced us to concentrate attention on decrepit systems. Their replacement has been augmented 2.5-fold: these trunk lines must be made with increased strength and reliability. Aside from the grievous event in Gorkiy, which everyone is aware of, heating lines also went out of service last winter at Ulyanovsk, Kuybyshev, and Orel. Indeed even in Moscow there were 17 breakdowns of the largest trunk heating lines and the supply of heat was curtailed to residential and administrative buildings, hospitals, schools, and kindergartens. All of these and other incidents have been thoroughly evaluated and those responsible have received strict party reprimands. But this is what is disturbing. In some places the freezes have already begun, the full-scale heating season is about to begin, and yet an important segment of heating systems has not been repaired so far only because the plants of USSR Mintyazhmash failed to deliver pipe and fittings and still have not made them.

[Question] The decree of the CPSU Central Committee posed with particular severity the question of the need to speed up work on facilities near completion so that they come on line more quickly. What is the situation at construction projects near completion?

[Answer] We are extremely concerned about the state of affairs at stations which are supposed to come on line. The pace of construction and installation work, adjustment and prestart stages has been clearly unsatisfactory, and the criticism of the CPSU Central Committee on this head is to the point and justified. It is a question of personal responsibility for the readiness of the new generating units. In spite of all the difficulties we must activate by 1 December at least 7 million kw of capacity and the planned quantity of high-voltage electric power transmission facilities. This is no simple matter: up to this point the electric power from new capacities has been one-third of what was planned. The plan for construction and installation work at stations near completion has been performed by the sector at a level of only 93 percent. We are taking the most vigorous steps to make up for lost time. More than 6,000 additional construction workers, fitters, adjusters, and additional machines and machinery have been sent to the projects near completion. Delivery of structural fabrications and building materials, pipeline, and boiler and auxiliary equipment—everything that is produced at our ministry's plants and enterprises—has been speeded up. But even full mobilization of internal resources is clearly inadequate to meet the deadlines for startup. It is extremely necessary to receive immediate help from related departments. Here are a few figures. Back in the 1st quarter of the year the machinebuilders were supposed to deliver condensers to the people in the power

industry for the turbines of the Novo-Angrenskaya GRES, the Novosibirskaya TETs-2, and the Moskovskaya TETs-16 and TETs-24. More than 30 heat exchangers, almost 3,000 tons of pipe for pipeline, and many reduction-cooling units, and thousands of pieces of valve fittings were also not delivered. Nor did plants and associations of Mintyazhmash, Minelektrotekhprom, Minkhimmash, and USSR Minpribor perform their contractual obligations any better in the 2d quarter, and their debts to us continue to increase.

We are bewildered that we are being let down even by such well-known enterprises as the PO "Leningrad Metal Plant," the Podolsk Machinebuilding Plant imeni S. Ordzhonikidze, the Leningrad association "Elektrosila," "Uralkhimmash," cable plants, the Tomsk Manometer Plant, and the Lutsik Instrumentmaking Plant.... The Belgorod Power Machinebuilding Plant has been extremely unsatisfactory in delivering products. Moreover, its work has been irregular for many years in succession. According to figures as of 15 September, this enterprise has failed to ship more than 3,000 tons of pipe for 12 heat and power facilities whose capacity exceeds 2 million kw which it was supposed to deliver under the plans for the 2d and 3d quarters. Approximately the same loss has been inflicted by the Cheboksary Electrical Apparatus Plant and the Tashkent PO "Elektroapparat," whose products they have been waiting for since back in the 1st quarter at the Mariyskaya and Novo-Angrenskaya and Kemerovskaya GRES's, the Tyumen TETs-2, and in the aggregate at 13 projects with a total capacity of 2.2 million kw. Nor are we ourselves free of errors. But the main thing now is not to explain relations, but to put capacity on line. To mobilize every effort to that end, regardless of departmental subordination. We feel that local party authorities and people's controllers must also take the delivery schedules under their particular oversight: this is a concern of the entire nation!

[Question] If the stations and generating units are to operate with maximum efficiency, there have to be guaranteed stocks of fuel. However, the movement of coal and petroleum products and the supply of gas are still lagging behind needs....

[Answer] As of 1 October there should have been at least 36.1 million tons of coal at our power stations. Its arrival has been relatively good. But delivery of this fuel to the power stations of the Khabarovsk and Maritime Krays has been held up: here the stocks are 1 million tons below last year.

[Question] Anatoliy Ivanovich, is it possible to speak even today about some "reserve strength" of power and heat facilities in the winter months? Suppose that once again the cold is worse than the average over many years!

[Answer] I can give you the figures. Assuming average weather conditions, the shortage of power will be about 3 million kw and will be distributed evenly over practically all the regions of the country except the Northwest.



The most acute shortage of electric power will be felt by the south, the Northern Caucasus, and the Transcaucasus, as well as by the regions of the Urals, where we intend to transfer more than 3.5 million kw of power from the center of the USSR. There and in the Middle Volga the equipment will be operating under maximum load. The way out is to reduce in an organized way the peak power consumption on days with extremely low temperatures. The shortage of capacity can be made up with that kind of maneuver. For example, last winter fuller use of night shifts, repair of power-intensive equipment, and shutting off unnecessary large electric heating devices made it possible to reduce the maximum load in the country by 5 million kw. And this when by no means all oblasts and regions have mastered patterns of operation that conserve power.

But we should not labor under illusions. We can anticipate that the supply of heat will be difficult in Kurgan, Vladimir, Ulyanovsk, Biysk, Krasnoyarsk, and a number of other cities in the country. That is why even now we must take care about good insulation of steam and heat lines and of residential and public buildings.

It is a question of fighting waste. The systems of Glavtsentrenergo alone have managed to achieve a saving over last year of 91,000 tons of standard fuel for their own needs by reducing specific fuel consumption and losses of electric power in networks. At the same time, Mosenfergo, Chuvashenergo, and a number of other systems are using their resources uneconomically. In every oblast

there are dozens or indeed even hundreds of enterprises whose managers are fighting for economy and thrift only by talking about it.

Against the background of what can only be called "munificence" (at the expense of the state) the true stewards stand out particularly sharply. Take, for example, the Vladimir Tractor Plant imeni Zhdanov. They have not been sparing on developments by scientific research and project planning institutes of Moscow, Volgograd, and Vladimir. They have also been testing power and processing equipment, some of which they have replaced, they have worked out optimum rates of energy consumption for shops and sections. The decree of the Central Committee explicitly mentioned the need to react sharply to any shortcomings in performance of the prewinter measures and to put a stop to the formal bureaucratic approach in performing the tasks that have been set, to increase the responsibility of both the managers and every worker for a thrifty attitude toward power and heat. I mention this because the decree must be accompanied by immediate action. I think this would be a good time to conduct a monthly review of winter preparations of industrial enterprises, the facilities of the housing and municipal-service industry, to visit power stations, to study the reliability of main heating lines, and to literally take a look at every apartment. I am convinced that this position on the part of the ministry is supported by local party and soviet authorities, work collectives, and the inhabitants of cities and villages. However severe the winter, last year's troubles must not be repeated.

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## Civil Aviation

### Aeroflot Opens MPR, Ireland Routes

18290010 Moscow IZVESTIYA in Russian 1 Oct 87 p 6

[Article by V. Tklich: "Aeroflot's Ties are Strengthening"]

[Text] A TU-154 aircraft will be used on the Ulan-Bator route opened in honor of the 70th Anniversary of the Great October Revolution. MIAT, the Mongolian Airline, plans to make the first flight on this route on 1 October.

Aeroflot is also expanding and deepening its aviation cooperation with other countries. On 29 September the Ministry of Civil Aviation signed an agreement to establish air transport between the USSR and Ireland. The agreement gives aviation enterprises in Aeroflot and Air Lingus the right to make commercial flights between points in the USSR (Moscow, Leningrad) and points in Ireland as well as transit points in both countries.

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### Joint Maintenance Agreement with Pan Am on Moscow-N.Y. Route

18200010b Moscow VOZDUSHNYY TRANSPORT in Russian 3 Oct 87p 4

["USSR-U.S.: A New Stage of Cooperation"]

[Text] In Moscow talks have been completed between delegations from the USSR Ministry of Civil Aviation and the management of Pan American World Airways. During the course of the talks an agreement was made to organize a direct, jointly operated air route between Moscow and New York.

Keep in mind that there are now two regular air routes between the USSR and the U.S.: Moscow - Washington and Moscow/Leningrad - New York. Twice a week an Il-62M flies to New York and once a week one flies to Washington, with a service stop at Gander in Canada. Three times a week Pan Am flies a Boeing 747 from New York to Frankfurt am Main and from there a Boeing-727 flies to Moscow and Leningrad.

The agreement provides for a joint Soviet-American enterprise for operating the air route and for the construction of hotels in the USSR.

According to the agreement Aeroflot and Pan Am will first begin joint non-stop flights between New York and Moscow, using Boeing 747's and American flight crews and service personnel. Three Aeroflot flight attendants will also be on board.

Non-stop flights will enable air passengers to save considerable time. According to the flight plan, the non-stop route between New York and Moscow will take 8 hours

and 20 minutes, while the flights in the opposite direction, encountering head winds, will take 8 hours and 55 minutes. Pan Am and Aeroflot, which are now making one stop flights, will save three hours. From Kennedy Airport, where Pan Am is based, there are connections to 30 cities in the U.S. These cities will have a convenient route to Moscow. In its turn, Aeroflot will offer passengers an extensive local air network which links Moscow with any corner in the Soviet Union.

The agreement calls for Aeroflot and Pan Am to equally share passenger and freight capacity on 412 seat wide-body jets. Each carrier will have its own market, will separately sell its share of seating and freight and receive the corresponding income. The freight capacity of a Boeing 747 is over 16 tons.

Also, the agreement provides passengers using the services of this joint enterprise with hotels in Moscow, Leningrad and other cities in the USSR.

Flights will begin on 15 May (3 weekly). Flights will depart New York on tuesdays, fridays and saturdays. Return flights from Moscow will be on wednesdays, saturdays and sundays. Three routes will remain on the schedule until 15 September. From 16 September to 29 October 1988 and from 2 April to 14 May 1989 there will be 2 flights a week, while there will be one flight weekly on the winter schedule (30 October to 1 April).

In addition to the non-stop flights, in the future Aeroflot and Pan Am will also continue previous one stop routes between the USSR and the United States.

Praising the new agreement, A. N. Volkov, USSR Minister of Civil Aviation, stressed that the creation of the joint enterprise will be a concrete contribution of Aeroflot and Pan Am towards developing mutually advantageous Soviet-American ties and that the scale and prospects of this step meet the interests of our business cooperation.

Edward (Ecker), chairman of the board at Pan Am, stated: "Airline passengers will obtain considerable advantages from this new form of cooperation. We applaud the new businesslike approach in American-Soviet relations, which made this agreement possible."

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## Motor Vehicles, Highways

### Restructuring in Auto Industry Viewed

18290002 Moscow AVTOMOBILNAYA PROMYSHLENNOST in Russian No 8, Aug 87 pp 1-3

[Article by N. T. Sorokin: "Perestroyka and the Manager"]

[Text] In the wake of the goals enunciated by the 27th party congress and the January (1987) plenum of the CPSU Central Committee, and by virtue of the very time

in which we are living, it is incumbent on every Soviet citizen to exhibit his sense of responsibility, to be involved in the events now unfolding, and to contribute in a substantive way to the cause of helping our socialist society develop at a dramatically faster pace and exploit the advantages of the new economic environment with maximum speed.

The actual responsibility for achieving these goals was given, for the most part, to labor collectives and enterprise and association managers. After all, the success of perestroika depends on no one other than them and their initiative, ability to dispense with stereotypical thinking, and willingness to work boldly and energetically to solve new problems. Experience, particularly that obtained by the Vladimirskiy "Avtopribor" Industrial Association, has demonstrated this in no uncertain terms. Perestroika is a success at those of the association's enterprises where managers involved in the transition to the new economic environment have not limited utilization of the economic approaches to running operations to themselves, but have encouraged managers at all levels—from their assistants to team leaders—to do the same. These managers solve problems through enlisting the assistance of party and labor union activists and the entire work force and openly discuss not only the role of propagandists, but of organizational personnel as well. By the same token, improvements are slow at places where managers neglect what the collective has learned and fail to make non-traditional decisions.

For example, it is no secret that many automobile industry enterprises were not completely ready for the self-financing and return-on-spending systems. However, if we look at "Avtopribor" as a whole, it is clear that this was not the case here. The association's general manager Ye. Vyunov, together with the party committee and enterprise collectives, has a 100 percent record in meeting the following goals: deliveries in accordance with contracts; retooling; redesigning products and improving quality; and using automated and mechanical assembly techniques. In addition, plant modernization is underway and in-house production of equipment is expanding. In accordance with party requirements, the association has laid out a well-defined, regular program of modernization: the strategy for expanding equipment production and implementing mechanical manufacturing processes between now and 1990 is clear and thorough. For example, this year's plans call for installing the first flexible, computer-controlled, and automated machinery assembly line. Over the next five years, production of automated non-ferrous metal pressure casting equipment and multi-unit machines and equipment will increase by a factor of four. For the most part, this equipment has been purchased abroad in the past. Overall, in-house production of machinery for in-house use will increase by a factor of two. At the same time, the administration is focussing its attention on implementing mechanized assembly techniques. To be specific, it has set up a mechanization design and engineering office at one of its flagship plants to deal with this. Even when

equipment is still in the development stage, the specialists assigned here, together with designers and engineers, make decisions that will permit the use of automated and mechanized assembly techniques in the future. Every year, the new-equipment shop produces 130-150 manufacturing units. For example, the flagship plant is the first in the country to build (according to designs of A. Sheblov, V. Maksimov, and G. Gushchina) and begin production of magazine-fed worm milling units for machining threads and worms. Currently, two shops have their full complement of these units. This has made it possible for them to raise their multi-unit machinery in-service index, improve the quality of machined parts, and effect an integrated solution to the problem of how to manufacture parts with worm components.

"Avtopribor" managers are well aware that managing the production economics system of an association is a necessary adjunct to running the association. So for precisely this reason and to perform this function, they created a new office—the Office for Association Expansion—headed by L. Solovev, one of their most experienced colleagues.

What the flagship plant has learned about expanding production of specialized manufacturing equipment has also been successfully employed by the Starovskiy Motor Vehicle and Tractor Equipment Plant imeni the 60th Anniversary of the Lenin Komsomol. In early 1986, general manager V. Chernodarov set up a machine building shop which, in addition to interval lubrication systems for automated equipment, began producing special equipment and machinery for the plant's manufacturing shops and work stations.

Over the next five-year period, "Avtopribor's" workforce will drop in size, although output will rise by 38.7 percent. As the general manager said: "Although the decisions enunciated by the 27th party congress prescribe an average annual output growth rate of 4.5 percent, we took a look at our resources and potential and decided to shoot for 8 percent, while increasing in-house machinery production by a factor of 2." The numbers for the initial year show that they are definitely on target.

For example, the association's personnel produced 2.4 million rubles worth of goods more than the plan prescribed, while productivity grew by 9.6 percent. One hundred percent of its contractual obligations were met, 18 new items went into production, and 9 obsolete ones were discontinued.

The state certification system was a major test of how much progress management and engineering personnel had made. And indeed, from the very beginning the system showed that the association's personnel were able to train adequately for it and eliminate (during an optional certification session in November and December of 1986) a host of problems left over from the



previous year. These included: non-compliance of technical documentation with GOST [State All-Union Standards Agency] requirements; absence of documentation at work places; shortages of equipment jigs; absence of material and component input control; and others. Over the period noted above, engineering offices and state certification personnel worked out a plan of action for each of the items that failed. The task of implementing the plans without stopping production or closing down the plant fell to integrated teams consisting both of personnel from the offices of the chief engineer, production engineer, metallurgist, and the shop that actually produced the item, and from the state certification agency as well. Chief engineers were responsible for coordinating the efforts of the teams and giving them practical assistance. These engineers were: at the "Avtopribor" association—S. Ksenz; at the Starovskiy plants—O. Vinogradov; at the Kirzhachskiy "Krasniy Oktyabr" plant—A. Obedkov; and at the Vyaznikovskiy Motor Vehicle and Tractor Light Fittings Plant—M. Garkul-Gurevich.

However, there is still a lot to be done. Solutions to instrument and tool availability and quality problems still have to be found, and therefore have been included in integrated plans to encourage growth and the use of scientific and technological advancements for 1987. We should also note that the state certification system is making a significant contribution in this area, since it is not merely a supplementary inspection at the end of the manufacturing process, but a governmental entity that works in conjunction with enterprise managers to deal with a broad array of issues relating to the current and future plans. It also helps insure that product development within the automobile machinery industry is sufficiently advanced and that the manufacturing techniques employed are adequate to bring quality in line with GOST requirements.

As we can see, many problems at the "Avtopribor" association have either been solved or are in the process of being solved. However, many problems have nothing to do with the collectives or managers of the association or its enterprises, and these remain to be solved. Dealing with them will require that managers resort to what we might call extreme measures.

For example, even a non-specialist knows that success in carrying out the program for a month or quarter depends to a great extent on how good managers' solutions to problems are, how much they are supported by collectives, and how willing workers are to face problems one on one, as they say. To the credit of the association's managers, all their proposals requiring extra effort have met with understanding and support from party, labor union, and komsomol organizations, and the entire labor collective.

For example, as early as the first half of January 1987, irregular shipments of compact electric motors from the Kaluga Electrical Automotive Equipment Plant imeni

the 60th Anniversary of October and magnets from "Avtopribor" industrial association enterprises in Oktiabrskiy (Bashkir ASSR) were clearly threatening to keep the plan from being on schedule. General manager Ye. Vyunov was forced to ask the collective to take a February work day and put its output on the January charts. The collective approved this plan, and the extra day enabled them to fulfill the plan for January.

The situation with respect to fulfilling the January plan also took a dramatic turn at the Vyaznikovskiy Motor Vehicle and Tractor Light Fittings Plant. The Ufimskiy Bulb Plant failed to deliver a single one of the A-12-3-1 automobile lamps that should have been supplied for the month. In December of 1986, the Chernyatinskii Glass Plant supplied lenses for head lamps which, although delivered in the required number, were not up to specifications. In January 1987, they did not deliver a single lens. Metallurgists from the city of Elektrostal in Moscovskaya oblast, the Bakinskii Light Metals Machining Plant, and others also failed to carry out their contractual obligations.

The situation was obviously not a simple one. But plant management (V. Davydov, general manager) and the collective under their leadership reaffirmed their desire and ability to fulfill the spirit and letter of the state plan. The quotas for the January plan were met and even exceeded. On 25 January, when the plant was more than four days behind the schedule in the plan (in mass production facilities, a lag of this magnitude is considered impossible to make up), the general director turned to section heads and the party and labor union activists for advice. To put it bluntly, the collective was not only alarmed about the general situation, but also provided a way out of the predicament. Their unanimous decision was that they had to catch up in subsequent months of the quarter. Regulations permit this, and the chosen course of action was carried out.

Thus, two plants in the association have been forced to the verge of the impossible by the shortfalls of their suppliers.

We should probably note that on the whole the workers at the Vyaznikovskiy Motor Vehicle and Tractor Light Fittings Plant are operating in accordance with the spirit of perestroika. They are well aware that the breakthrough into the future and the journey to new horizons depend on the rapid growth of the machine building industry. This is the reason the plant's personnel responded to the Five-Year Plan with a counter-pledge to raise output by 43 percent. But setting a poor example for the collective they lead, the plant's managers are changing the way they operate too slowly and in too few areas, even though they are making progress. For example, it is already clear that plant manager V. Davydov and his assistant for construction N. Ovechkin are responsible for the failure of the accelerated-construction paint shop project, since they were banking on imported equipment, which, because it was held up, set

the deadline for completion of construction back to 1989-1990. Clearly they were unable to benefit from the experience of the "Krasniy Oktyabr" plant, which used its own resources to make similar equipment. In addition, the Vyaznikovskiy plant has two outstanding manufacturing equipment production shops that could have made the first painting line by this year. Moreover, machinery construction is nothing new for them either. The IAP-478 gas-phase calorizing unit they fabricated has been exhibited many times at the USSR Exhibition of Economic Advances and given the entire spectrum of awards.

January and the first quarter of 1987 demonstrated once again that two other enterprises in the association are not up to par in their perestroyka efforts. Thus, the "Krasniy Oktyabr" Motor Vehicle and Tractor Light Fittings Plant's usual production rate was "derailed" by the state certification program. The plant failed to sell the volume prescribed in the plan for the first quarter of 1987 (counting deliveries in accordance with contractual obligations, they were at 87.13 percent of quota), and had not even made up the difference after four months. A 265,000 ruble fine was levied for delivery shortfalls. In addition, manufacturing cost was 602,000 rubles higher than the level stated in the plan. The final result was that profit was 380,000 rubles below the figure set in the plan, with all the attendant consequences.

The reasons for this situation are obvious. The plant's workers and their leader V. Fedorenko, the managing director, fell victim to circumstances and dependency on raw and other material suppliers, and were unable to marshal in-house resources and the potential latent in the human factor. Yet if at the same time we look at this from the traditional point of view, these people have done and are continuing to accomplish a lot. After all, they are solving problems associated with expanding and retooling the plant, as well as industry-specific ones related to creating rotary conveyer plastic processing

lines. For example, in-house machine construction in 1987 is 36 percent higher than in 1987. But managers alone do not have the resources to speed up the process of manufacturing these rotary conveyer lines for the industry's plants. What they need is for Minavtoprom [Ministry of the Automobile Industry] managers to help "Krasniy Oktyabr" obtain units and machinery on a cooperative basis from ministry plants. After all, the first two rotary conveyer lines are supposed to go on line in this—the third—quarter of this year.

The difficulty involved in successfully developing new management techniques based on the economics of collectives' performance stems from the following: a collective doing a bad job has to improve performance fast, while an enterprise operating properly has to continue doing so without breaks in production. So there is no way out of the dilemma unless higher ranking organizations become involved. However, the attitude towards plants has not yet changed very much. For example, the quotas set by the Ministry of the Automobile Industry for the "Krasniy Oktyabr" plant and automobile-industry related enterprises in Vladimirskaia oblast have obviously failed to motivate a concerted effort to identify and develop new products, modernize or retool facilities, or pursue in-house machinery construction. As we have already noted, the association's enterprises planned to double, and even treble specialized manufacturing equipment output during the 12th Five-Year Plan, although even now there is no way to pay for doing so. The same "Krasniy Oktyabr" we have been speaking of has adopted a "wait and see" stance in regard to paying for one million rubles worth of imported machinery, the result of the 1987 Financial Plan's failure to provide sources of funding for the spending on equipment. Moreover, the percentage of the profit the plant will secure in accordance with the 1987 quota will be 31.11 percent, while in 1990 it will be 25.2 percent. Simple arithmetic shows that this is manifestly inadequate for implementing the plant's plans and social program.

Disposition of profit	1987	1988	1989	1990
Payments to Budget	5.27/5.27	4.4	13.83	54.04
Fund Payments	28.42/28.42	4	9	8
Payments to Central Fund	35.20/16.31	59.23	47.06	12.76
Payments Total	68.89/50	67.63/50	69.89/50	74.80/50
Profit Remaining at Plant	31.11/50	32.37/50	30.11/50	25.20/50
Percentage of Profit for:				
Fund for Scientific, Technical, and Industrial Expansion	31.84/45.94	29.42	33.63	33.14
Fund for Social and Cultural Programs and Housing Construction	35.82/29.7	40.23	33.12	30.49
Incentive Fund	32.34/24.36	40.35	33.25	36.37

The Vladimirskiy CPSU Obkom Industry Department has carefully investigated the problems encountered in implementing the new management techniques at "Krasniy Oktyabr" and decided that the quota levels in the

collective's counter-offer to Ministry of the Automobile Industry management were correct. These levels (denominator) and those set by the ministry are shown (in percent) in the table above.

In accordance with the principles governing the transition to a complete *khozraschet* system, profit is the criterion used to evaluate operations and determine the economic incentives personnel receive. However, USSR Gosplan, Gosstnab, Ministry of Finance, and other agencies' decrees have had a disruptive effect through their system of double and triple fines.

For example, going over quota in materials usage raises manufacturing cost and subsequently decreases both profit and incentive funds. But the USSR Gosstnab has introduced additional fines for overspending and overconsumption, and takes them from whatever profit the enterprise has left. In fact, as a general rule, associations face double and triple punishment for producing items in the first category of quality, failing to meet contractual delivery deadlines, producing low quality items, failing to meet consumer product output growth quotas, and many other shortcomings. In other words, these additional circumstances have the effect of drastically diminishing profit's role as a general indicator of *khozraschet* activity, even in a total *khozraschet* environment.

Self-financing is another problematic issue, since it has not yet been possible to identify a pro rata quota that would offset depreciation payments for new equipment replacements.

It is clearly time for industry technological institutes to create laboratories that would do comparative studies of enterprise levels of growth. The ministry in charge of the given industry would be able to use these data to perform economic studies of growth in individual industrial branches, make future and current plans, and formulate an overall technical and economic growth strategy and investment policy. There is a tremendous need to solve these problems, particularly for small plants. However, the ministries still cling to their stereotypical view that small plants have small problems. Of course they are forgetting that vehicle quality is not just a job for such giants as the VAZ [Volga Automobile Plant], GAZ [Gorkiy Automobile Plant], ZIL [Moscow Automobile Plant imeni Lenin], MAZ [Minsk Automobile Plant], or others, but to a lesser extent is the result of how well hundreds of smaller plants make their instruments, parts, components, etc. And if we fail to deal with assigning them individually adjusted quotas based on studies of their economic activity and the problems they will face in the future, we will be committing a grievous error.

In order to hold managers accountable to the maximum degree, we must give them room to function, free them from micro-management and petty constraints, and supervise them with the attitude that the performance of the personnel and state enterprise entrusted to them are sole criteria for evaluation.

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**Steps Taken to Improve BSSR Road Construction**  
*18290004 Moscow AVTOMOBILNYYE DOROGI in Russian No 9, Sep 87 pp 3-4*

[Interview by M. G. Sayet of Nikolay Aleksandrovich Artemyev, chief of the Main Automobile Inspectorate Administration of the BSSR Ministry of Internal Affairs: "The Road Must Become Safe"]

[Text] *There were 7,500 transportation and road accidents in Belorussia last year alone, as a result of which 1,300 people died and about 7,000 were seriously injured. Some of these sad statistics are the fault of road workers that did not ensure the requisite safety conditions. This was discussed in the conversation of our correspondent with the chief of the GAI [State Automobile Inspectorate] Administration of the BSSR MVD [Ministry of Internal Affairs], Col Nikolay Aleksandrovich Artemyev.*

Correspondent: What is the state of the roads in the republic from the point of view of ensuring traffic safety?

Artemyev: Every year we ascribe roughly 6-7 percent of road accidents directly to the unsatisfactory state of the roads. They are principally during the winter, when slipperiness is enhanced and there are snow drifts, but a number of accidents are also recorded in the summer months, when there would seem to be nothing to hinder keeping the roads in good shape for travel.

In recent years we have often been bothered by the surface treatments. It would seem that everything is being done to increase the special properties of coverings, but as a result of violations of production operations technology, a layer of bitumen forms and the road becomes practically just as slippery as ice, especially when it rains. But that is still not all. Accidents are sometimes associated with breaches of the rules for construction and repair work on roads. One can often see stretches with signs installed incorrectly and some construction machinery and materials left on the right-of-way.

Correspondent: What do you feel must be done to improve the state of the roads?

Artemyev: First and foremost we must improve the outfitting of road organizations with machinery for the winter upkeep of the roads. The road workers are suffering from an acute need for powerful snowthrowers and machinery to spread de-icing materials. Every year we make an inspection of the principal auto roads in conjunction with the road workers and truckers, paying particular attention to places where auto accidents are concentrated and compiling detailed prescriptions to eliminate the shortcomings. It must be said that the majority of them are carried out, but, unfortunately, they are not always done in good time or with good quality. We have to return to some of them year after year.



We are already preparing to issue a road atlas of Belorussia with indications on it of the places where accidents are concentrated, so that drivers know where they must be careful and what the danger is associated with on a specific stretch of road.

**Correspondent:** Do you feel it would be expedient to improve the acceptance of new highways, and what is the role of GAI herein?

**Artemyev:** Indubitably. The road organizations finish road construction, as a rule, in the fourth quarter, and frequently turn them over when there is already snow on the surface that hides shortcomings and makes it impossible to grade them. Along with BSSR Mindorstroy [Ministry of Highway Construction and Maintenance], we made it a firm condition that we will not accept roads that are covered with snow. The GAI devotes especial attention in acceptance to the banking of sharp turns with a small radius, railings, the state of the right-of-way and markings.

**Correspondent:** Nikolay Aleksandrovich, wouldn't it be expedient for representatives of GAI to do technical surveillance during the construction process?

**Artemyev:** There is already such surveillance. As early as the designing of roads, the GAI makes recommendations on the choice of direction, the width of the road surface, additional structures, driver rest areas and parking places. We track the course of fulfillment of the recommendations made during the construction process and elaborate on details with them. This technical surveillance makes it possible to prevent shortcomings and misunderstandings that arise in acceptance.

**Correspondent:** Please tell us about the participation of the GAI in the reconstruction of roads and their repair.

**Artemyev:** The planning-estimates bureaus, which develop plans for the repair of roads, do not coordinate documentation with us, and therefore they frequently do not maintain the standards that are defined by construction norms and rules. This especially concerns capital repairs. There is still no provision that obliges the road workers to coordinate plans for capital or routine repairs of roadways with GAI. This leads to the fact that the road workers economize on safety elements in the course of repairs. By way of example, they widen the right-of-way and the road surface but leave the bridge narrow, as was done on the Minsk—Khatyn road. There are several small narrow bridges on the Minsk—Mogilev road as well, which road was reconstructed long ago. And what's more, the road workers usually widen the surface at the expense of decreasing the width of the shoulder. What does this lead to? Drivers must of necessity stop practically on the road surface, which substantially increases the danger of accidents, especially at night.

This is not all that is entailed by a widening at the expense of the shoulder. In capital repairs, it often happens that, say, the width of the road surface increases, but after reconstruction according to this longitudinal profile, the radius of vertical curves remains on the same plane as before. Visibility conditions are thus considerably worsened, and the erroneous impression is created that the road is wide and one can travel at high speed. The consequences are grievous. We must straighten out stretches, spending several times more funds than would have been spent in the event of the timely intervention of GAI in the reconstruction planning. New norms have now been developed and incorporated for road planning that make heightened requirements for traffic safety, and their strict observance will facilitate a decline in the accident rate.

**Correspondent:** Do accidents occur due to poorly reinforced shoulders?

**Artemyev:** Plenty of them. Where the shoulders are not reinforced, the edge of the road surface erodes, sags and creates particular danger, especially for motorcyclists and inexperienced drivers. Such shoulders harbor a multitude of dangers.

**Correspondent:** The construction of farm roads on kolkhozes and sovkhozes has increased sharply in Belorussia today. Do they satisfy the conditions of traffic safety?

**Artemyev:** We have no serious complaints against the builders. But we have many for the upkeep of farm roads. The point is that after their turnover for operation, they become ownerless. The kolkhozes and sovkhozes, the customers of these roads, have neither the materials nor the machinery to keep them up. Even when they want to, they cannot maintain their roads in good condition. Neither is it done by the maintenance services of BSSR Mindorstroy. The time has probably come to put the farm roads under the jurisdiction of Mindorstroy, organizing new operational road subdivisions for this purpose.

**Correspondent:** Markings are frequently lacking on several roads of the republic. Does GAI permit this?

**Artemyev:** The GAI cannot permit that which cannot be allowed. But what demands can we make of the road workers if they have neither the materials nor the machinery to do markings? The republic Mindorstroy has now developed its own formula for thermoplastic materials and is producing a small quantity of this material, but the problem remains acute.

**Correspondent:** And what is the state of affairs with the availability of emergency telephone communications on the republic's roads?

**Artemyev:** Bad. And such communications are extremely necessary to the road workers, the truckers and to the GAI! True, the emergency communications

lines are being built in several places. On the Moscow—Minsk—Brest roads, for instance. But this road has been used for a long time, while it is essential to envisage communications devices in the planning stage. In the future, there will be emergency communications on the Leningrad—Kiev—Odessa and Minsk—Vilnius roads on the stretches that pass through our republic. It is a pity that the construction of these facilities is being dragged out.

**Correspondent:** In conclusion, this question: what tasks still face the road workers, in your opinion, on the plane of improving traffic safety?

**Artemyev:** There are many of them. We were in a difficult situation last winter. The road organizations installed snow fences, but due to a shortage of them, far from all stretches of road were protected from snow. And the overall width of the roads? Local authorities, trying to increasing cultivation areas, try to plant on them.

The issue of refreshments for drivers has yet to be resolved. The lack of hot food has an effect on the mood and the fitness to drive, and ultimately on traffic safety. Other auto services are also lacking.

Of course, I would prefer that these issues be resolved better and more quickly.

These problems probably do not trouble traffic participants alone. Many letters from workers come to the editors of newspapers, television, radio and the GAI in which is expressed a desire to see good service on the roads of the republic along with making the roads convenient and safe.

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12821

### Higher Technology Level at BSSR Auto Plants Noted

18290005 Moscow ZA RULEM in Russian No 10,  
Oct 87 pp 1-2

[Interview by Za Rulem correspondent V. Arkusha with Mikhail Stepanovich Vysotskiy, chief designer of the BelavtoMAZ Association and corresponding member of the BSSR Academy of Sciences: "Three Steps to the World Level"]

[Text] The word "dieselization," the symbol of renewal at many motor-vehicle plants, is not in circulation at MAZ [Minsk Motor Vehicle Works]: after all, they have been making nothing but diesel trucks here since it was founded over 40 years ago. The chief designer of the BelavtoMAZ Association, BSSR Academy of Sciences Corresponding Member M. Vysotskiy, relates to journal correspondent V. Arkusha the directions their designs are

developing in today and what new developments are incarnating the requirements to accelerate scientific and technical progress and reach the highest world standards here.

[Question] In your opinion, Mikhail Stepanovich, what makes the current five-year plan noteworthy for the Minsk truck makers?

[Answer] Just like the whole country, the beginning of the radical transformations and the policy of restructuring planned by the 27th CPSU Congress and developed in the resolutions of the January and June (1987) Plenums of the CPSU Central Committee. This policy is directing us designers to raise sharply the level of development and the rate of model renewals. The plant will go completely over to the output of a new family of vehicles in 1988-89, the base models for which will be the MAZ-6422 (6 x 4) and MAZ-5432 (4 x 2) long-haul tractor-trailers. At the same time, we will have to ensure for the base models the indicators of the best foreign prototypes in the next few years, and by the middle of the next five-year plan, surpass their level, as forecast for the cited period.

[Question] Whence apparently follows the conclusion that the long-haul tractors are defining and in the future will define the technical level of MAZ trucks?

[Answer] Just so, and these are weighty foundations. In order to support an ever increasing volume of shipping, we must raise the level of productivity in transport operations—and, this means, raise their service life and cargo capacity, increase engine capacity and achieve improvements in economy. Furthermore, the broader the foreign-trade ties of our country, the more tractor-trailers that are maintaining international routings. And this transport equipment should meet a multitude of specific requirements, including traffic safety and protection of the environment.

Finally, one cannot forget the reputation of the make—both in the face of famous foreign firms and in the eyes of Soviet drivers.

[Question] Reaching the parameters of world standards and surpassing them is a crucial and very difficult task. What paths are projected for achieving it?

[Answer] Along with expanding the family and increasing the output of new vehicles, a program of modernizing them that includes a series of stages is being implemented. The first was completed in 1985 with the assimilation of the renovated MAZ-64227 and MAZ-54322 tractors in place of the 6422 and 5432 base models that were series produced from 1980 to 1983. The service life of these vehicles was increased considerably—from 320,000 to 450,000 kilometers. The intervals between maintenance were increased substantially: from 5,000 to 8,000 kilometers for TO-1 and from 20,000 to 24,000 for TO-2. The amount of routine maintenance has been

reduced thanks to design improvements and the incorporation of assemblies that require less frequent lubrication along with the employment of better grades of oils and lubricants and the like. We were able to reduce fuel consumption by roughly 6 percent. We are equipping the tractors with spring-mounted cabs, as well as enlarged springs, to improve the smoothness of the ride.

The productivity of our new vehicles will be 50 percent greater on average than those now being produced. This has been achieved through increasing freight capacity of the semi-trailer with the MAZ-6422 tractor to 27 tons versus 25.3 and the semi-trailer with the bi-axial MAZ-54321 tractor to 23-24 tons versus 20-21 along with increases in driving speeds.

[Question] What were the innovations that had such an appreciable effect on the parameters of the vehicles?

[Answer] The speed features and fuel economy were improved thanks to the employment of new engines with turbocharged engines, the YaMZ-8424 (420 hp [horsepower]) and the YaMZ-8421 (360 hp), nine-speed transmissions, the selection of a more efficient gear ratio for the drive axle etc. A set of devices that reduce wind resistance (a volumetric cowling on the cab, below the bumper, and side cowlings) and tires with less roll resistance also played a role.

[Question] Everyone recognizes today that one can count on real productivity increases only by providing the most favorable, comfortable and safe working conditions for the driver. How much do the new versions of the MAZ vehicles meet this requirement?

[Answer] We have tried to take this into account to the utmost, beginning with such small details of the interior as a round blind on the windows, places to put personal items and beds and containers for water. The equipment in the modernized cabs includes an autonomous space heater with an automatic temperature-maintenance mode (in addition to the liquid one from the cooling system), and an air conditioner and refrigerator for produce in the "deluxe" version.

Safety, aside from brakes that meet contemporary requirements, is ensured by highly efficient lighting instruments (headlights with halogen lamps, spotlights and fog lights), devices that protect the tractor-trailer in the event of side or rear collisions and a collapsible steering column. The installation of inertial safety belts is envisaged.

The driver can receive information on flaws in the most important units and assemblies from an on-board monitoring system (OMS). The engine is equipped with an automatic shutoff in the event of overheating, exceeding the allowable rotational frequency of the crankshaft or a drop in oil pressure.

An electronic recording tachometer that registers the route, speed and fuel consumption will provide for monitoring and accounting for the operations of the tractor-trailer.

[Question] You have touched on such topical issues as the employment of new electronic devices in trucks. Doesn't it happen that rather than easing the work of drivers and operators, it brings on additional troubles? Examples have unfortunately been provided by both motorcycles and passenger cars...

[Answer] There is just one way out: all steps taken must have the required level of reliability and longevity for these instruments. Without them it is impossible and unrealistic not only to surpass world standards, but even to come close to them. Thus, aside from what has already been mentioned, it is planned to equip the new MAZs with both a device to monitor the loading of the vehicle and a microprocessor system that will control fuel intake. For the future we plan to incorporate an anti-lock brake system, electronic transmission control and a multiplex system that will sharply increase the reliability of electrical equipment, since all signals are transmitted along one or two buses.

I want to emphasize that electronic instruments are not an end in themselves, but a means of raising substantially the economy and safety of the truck and its ecological properties.

[Question] Evidently, in speaking of them you have touched on the next, third stage in the development of MAZ designs. What time frames and indicators is it oriented toward?

[Answer] We must provide for a service life of no less than 700,000 kilometers and reduce fuel consumption by another 7-10 percent by 1991-93. For this purpose we must optimize the power and torque properties, reducing nominal engine rotation, as well as reduce losses in the transmission, using a gearbox with direct transmission and one-stage (without wheeled transmission) drive axles.

We must further improve aerodynamics and reduce losses from tire roll resistance. We are counting on the fact that the reference fuel-consumption level will reach roughly 27 liters per 100 kilometers at a full tractor-trailer mass of 42 tons as a result.

[Question] What do you feel is the key condition for fulfilling what is projected in such a short time period?

[Answer] The active position and energetic work of the Yaroslavl motor builders that supply us with the power plants. I think that there is no need to say a lot about the fact that there is a most immediate connection between the parameters of the engine and the truck. And after all, the parameters of the YaMZ-238PM and YaMZ-238F diesels that we outfit our trucks with today in no way



meet contemporary standards—the result of the fact that the requisite attention was not paid to their modernization. Unfortunately, the new engines of the 840 family also do not satisfy us in all indicators: they are excessively heavy in particular. It is absolutely essential to increase the amount of versions of them by power, so as to ensure the optimal parameters for the trucks and tractor-trailers under various operating conditions.

Foreign experience furthermore demonstrates that the total mass and power ratios of tractor-trailers are increasing. This means that if we are oriented toward the creation of versions with a total mass of 48-52 tons, a motor of 500-520 hp rather than 420 is needed, and it should moreover be much more economical.

The YaMZ-236M 180-hp diesel is also in need of urgent modernization. It is otherwise impossible to speak of a comprehensive rise in the technical level of the MAZ family, since six-cylinder diesels comprise the greater portion of output.

Naturally, one should not take this as an attempt to shift our responsibility onto the motor builders. The technical level of the Minsk trucks is our intimate concern, and all of the efforts of our design services are aimed at raising it.

[Question] The USSR State Enterprise (Association) Law that was recently adopted envisages solid and direct ties with scientific research organizations will be set up for the purpose of accelerating scientific and technical development. We have heard more than once that they are actively seeking ways of integrating science and production at the BelavtoMAZ Association and its lead enterprise, the Minsk Motor Vehicle Works. I would like to dwell in more detail on this.

[Answer] It became apparent as early as in the development of the 6422 family that it would be impossible to ensure a high technical level using former methods of design and refinement, the more so using the limited manpower of plant specialists. Profound scientific conceptions of many problems and modern methods of planning, testing and production were essential, in the development of which the specialists of academic and scientific research institutes could render valuable assistance.

This process quickly became a bilateral and mutually beneficial one. Say an institute develops a technique and carries out calculations on topics essential to a plant. At the same time, the experimental base of the plant allows the scientists of the higher educational institution or scientific research institute to realize and verify their ideas and developments that are of interest to the vehicle makers.

In 1975 the AvtoMAZ-BPI (Belorussian Polytechnical Institute) Association was created on a voluntary basis and carried out work according to a coordinated plan.

The scope of this activity has been expanded considerably today. The scientific production association, today called Avtofiztekhn, includes institutes from the BSSR Academy of Sciences, the Belorussian Polytechnical Institute and subdivisions of BelavtoMAZ.

Also interesting are such forms of collaboration with academic science as the permanent laboratory with dual subordination for reliability and service life of trucks: The Institute of Reliability and Longevity of Vehicles (INDMASH)—MAZ. The program of improvements to equipment output and creating promising prototypes first took on republic significance, and has now become one of the sections of the nationwide Reliability scientific and technical program.

One of its directions is the creation of an automated planning system (SAPR), the first phase of which has been operative since 1986. In conjunction with the Institute of Mathematics of the BSSR Academy of Sciences, a package of almost a hundred programs has been developed for the computer calculation of speed features, tractive dynamics, stability and maneuverability, load conditions etc.

[Question] As far as we know, many bench-testing processes have also been automated.

[Answer] More precisely, a flexible automated testing system (FATS) has been introduced. It is equipped with a computer control complex and will allow the accelerated refinement of designs. The system was created in collaboration with INDMASH, as well as the Institute of Technical Cybernetics (ITC) of the BSSR Academy of Sciences. It is based on easily resettable jigs (electrohydraulic pulsators) that reproduce all possible operating conditions.

The computer complex makes it possible, first of all, to assign operating modes to the jigs (a special package of programs has been developed for this) and, second, to automate the processing of test results, using another package of programs from the FATS.

The greatest virtue of the system is the opportunity of working on the problem of reliability of the principal assemblies and the whole truck in integrated fashion. With the aid of the testing complex, we are optimizing not only the design, but also materials and technology, and we are devising recommendations for operators. And the main thing is that the refinement of designs is speeded up by dozens of times.

[Question] Let's return to the State Enterprise Law. In order for the plant to move to a new level in the creation of technology in accordance with it, a solid run time of many years ahead is needed. What are the prospects for the development of planning and research work in this regard?

[Answer] In this five-year plan we should incorporate the second phase of the SAPR and bring the level of planning automation to 20 percent. We are planning to assimilate over 30 automated workstations for designers.

As for joint scientific and practical activity, there are already over 100 institutes and enterprises across the country in its orbit. I hope that collaboration with them will become even closer and more fruitful.

[Question] In conclusion, a question from a quite different realm. How do you feel about the fact that MAZ trucks took part this season in the ring-road races for the first time?

[Answer] I think that sports can serve to raise the technical level of trucks to no less an extent than for passenger cars, and thus such races are useful and necessary. We will assist the sportsmen in preparing the vehicles and take their experience and recommendations into account. And advertising is, of course, essential for our firm and our products like any other. We hope we will have no cause to be embarrassed by our trucks.

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